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Therapeutic Gazette.

Whole Series, Vol. XIV. | DETROIT, MICH., PHILADELPHIA, PA., } May 15, 1890. | Third Series, Vol. VI. No. 5.

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Original Communications.

*NEW THERAPEUTIC AGENCIES.**

LECTURE V.—ON THE TREATMENT OF DIARRHŒA AND CONSTIPATION.†

BY PROFESSOR DUJARDIN-BEAUMETZ,‡ PARIS, FRANCE.

GENTLEMEN:—I desire to devote this short lecture not to the complete study of the therapeutics of diarrhœa and constipation, but to the modifications in the treatment of both these affections which have been necessitated by our new acquisitions respecting the pathogeny of intestinal troubles.

In my first course, I dwelt at considerable length on intestinal antisepsis, and showed you that the digestive tube is a laboratory where are being incessantly elaborated septic products which must be expelled from the economy, or toxic phenomena will supervene forthwith. I shall not return to this topic; but these new notions have modified, or rather thrown light upon certain points heretofore obscure in the treatment of diarrhœa and constipation.

These two terms are not so far apart as one would suppose, for very often constipa-

* A second series of "New Medications," published in 1887.

† From advance sheets, revised by the author (translated by E. P. Hurd, M.D.). Lectures delivered in Cochin Hospital, Paris, France.

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tion leads to diarrhœa,—that is to say, the constipation ends finally in copious stools, and there is a reaction from scarcity of fæcal matters to rather profuse intestinal fluxes. If, moreover, constipation, by the prolonged sojourn of matters in the digestive tube, favors the penetration of toxines in the economy and a veritable stercoræmia, it is still by the same emunctory that elimination of all these toxic substances is effected after their absorption into the blood, for septic diarrhœa is a fact.

If you survey the symptomatic aggregate of toxic phenomena, whether determined by the presence of toxines generated in the digestive tube, or by the presence of those which have penetrated from the outside, you will see that they may all be referred to three forms, which are either chronic, subacute, or acute.

The first of these types, or the chronic form, is most often presented by constipation, or, it may be, by the alternation of diarrhœa and constipation, or by putridity of the intestinal contents. It is chiefly in gastric neurasthenia, in those that have dilated stomachs, that you will observe this form. Nervous symptoms, irritability of disposition, hypochondriasis, especially characterize this chronic form, and the bad humor of the constipated has become proverbial. Voltaire has given us a remarkable and perfectly physiological description of the influence of the stools on the disposition. Permit me to cite the passage: "Persons who have a fair amount of *embonpoint*, intestines well lubricated, the bile-ducts open and pouring out bile, peristaltic movements easy and regular, who rid themselves every morning of a good stool, such persons, who are by this fact favored by nature, are mild, affable, gracious, and sympathetic, and a 'no' from their mouths has more grace than a 'yes' from the mouth of one that is constipated."

The second, or subacute type, presents itself under two forms,—the gastro-intestinal and hepatic. The first constitutes what we once called "*embarras gastrique*," febrile or non-febrile. It is characterized by a furred state of the tongue, loss of appetite, and the existence of diarrhœa; it is generally accompanied by a more or less pronounced febrile state. These symptoms are the result of a real poisoning produced by the introduction of altered foods into the digestive tube, or, it may be, by the penetration of toxic substances by the inspired air. Prolonged sojourn in public halls or lecture-rooms, where a great number of persons are congregated and ventilation is bad, exposure for a considerable time to the air of dissecting-rooms, and even the very fact of breathing the air of our large cities, are conditions of septic poisoning; and the toxines, on being eliminated by the surface of the digestive tube, determine that particular state to which has been given the name of *embarras gastrique*.

The fever which accompanies this gastric embarrassment has the same origin, and the recent experiments of Roussy entirely confirm this view, in showing that certain diastases in penetrating the blood become pyretogenous. You know, in fact, that Roussy, by injecting into the blood *invertin*, that diastase, discovered by Berthelot, which transforms saccharose into levulose and dextrose, determined violent attacks of fever in animals.*

If you remember, moreover, that the intestinal juice possesses the property of inverting cane-sugar, of transforming saccharose into invert sugar, you will at once put the two facts together, and you will have a plausible physiological explanation of the febrile phenomena which accompany gastric embarrassment.

The other form is the hepatic form. As I told you in a previous lecture, the liver plays a considerable part in regard to the penetration of intestinal toxines into the economy; it is a natural barrier which prevents this penetration in most cases; but it is easy to understand that this barrier may be cleared or forced, or that the excessive work entailed upon the liver by an incessant and enormous destruction of toxines may bring about congestion of that organ, with resulting "biliousness" and catarrhal icterus. In his remarkable lectures on hepatic affections, Chaufard has adopted these new theories of catarrhal icterus, and has shown the influence of toxines in the production of this morbid state.

Lastly, the third type is the acute. Here the economy abruptly expels the toxic substances, which have entered it, under the form of diarrhœa and vomiting; this is indigestion.

Such, briefly summed up, are the three great types of intestinal poisoning. It is admitted that we have not complete data on

* Roussy, "Experimental Researches on the Pathogeny of Fever" (*Acad. de Méd.*, February 12 and March 12, 1889); see also *Bulletin de l'Acad. de Méd.*, November 12, 1889, No. 45, p. 468).

this subject, and I am persuaded that an attentive study of the fæcal matters, the examination of the toxines which they contain, and the state of putridity which they present, will enable us in the future to indicate with more precision the numerous troubles due to gastro-intestinal putridity, and I call to this point the attention of all orginal investigators.

Therapeutic intervention is needed in all these cases, and at the head of medicinal agents we must place those that promote intestinal antisepsis. In a former lecture I considered this subject at some length. I told you that we could obtain intestinal antisepsis by laxatives, by lavages, gastric and intestinal, and by a special hygiene. We will go over all these points in considering particularly the treatment of diarrhœa and constipation. There are, as I told you, inert powders which realize with considerable certainty this intestinal antisepsis, and at the head of these powders we must place the salts of bismuth, and particularly the salicylate. I was the first, several years ago, to experiment with salicylate of bismuth and apply it to the treatment of intestinal diseases. In the trials which I made with it at St. Antoine Hospital, and, in particular, in the children's wards, I proved it to be a remedy of great efficacy.

It was, in fact, about ten years ago that I first obtained a supply of this salt from M. Schlumberger, and experimented with it in my hospital. In 1882, Vulpian made trials of salicylate of bismuth in typhoid fever, and since the labors of Bouchard this bismuth salt has gradually taken the place of the trinitrate. Long ago the powerfully antiseptic properties of the latter in intestinal diseases were known. It is, in fact, a highly basic salt, and, moreover, it is absorbent, and its antiputrescent action is marked. But the salicylate is much superior. I should have said the salicylates, for there are several kinds of salicylate of bismuth, as Jaillet has shown; there is an acid salicylate and a basic salicylate.* Both contain free salicylic acid, the first forty per cent., the other twenty-three per cent. This free salicylic acid plays a considerable *rôle* in the antiseptic action of these salicylates. We find to-day in commerce a salicylate which responds very well to the needs of therapeutics, as Ragoucy has shown.†

You will associate the salicylate of bismuth with magnesia or bicarbonate of sodium, with naphthol, or charcoal, or salol, giving the medicine in the form of capsules or wafers after each meal:

1. Salicylate of bismuth,
   Magnesia,
   Sodium bicarb., aa ʒiiss. M.
   Divide in chart. No. xxx.

2. Salicylate of bismuth,
   Prepared chalk,
   Phosphate of lime, aa ʒiiss. M.
   Divide in chart. No. xxx.

3. Salicylate of bismuth,
   Naphthol β,
   Powdered charcoal, aa ʒiiss. M.
   Divide in chart. No. xxx.

Naphthol, whether naphthol α or naphthol β be used, is often badly tolerated by the stomach; it may even cause considerable irritation. In such cases I advise you to substitute salol for naphthol; it is an antiseptic, is very little toxic, and may be given in the same dose as the salicylate of bismuth.

℞ Salicylate of bismuth,
Salol,
Powdered charcoal, aa ʒiiss. M.

Sig.—Divide in chart. No. xxx., for administration in capsules or wafers.

By the side of these salts of bismuth and these antiseptic mixtures, I must speak of a plant which, if it possesses feeble antiseptic properties, is certainly among the most astringent. It is a plant obtained from Chili, to which Dr. Cervello first called my attention, and with which I was the first to experiment in Europe after its botanical species had been determined; I allude to the *Histerionica Baylahuen.* This plant is chiefly characterized by the yellowish resinous exudation which covers every part of it, and gives it when dry the appearance of a plant which had been dipped into resin and then dried.

An infusion is made with this plant by steeping 1 part in 150 parts of water. It is this infusion which is chiefly employed in Chili, and which we have used in the treatment of chronic diarrhœas, and we have been surprised with its action in certain abdominal fluxes which most resist our therapeutic agencies,—in the diarrhœa of the tuberculous, for instance. You will find in the theses which my pupil, Dr. Baillé, has devoted to this subject, a full account of the trials made with this new remedy in our hospital.‡

* Jaillet, "On the Salicylates of Bismuth" (*Bull. de Thèr.*, 1883, t. cv. p. 113).

† Ragoucy, "On the Composition of the Salicylates of Bismuth" (*Bull. de Thèr.*, 1883, t. cv. p. 328).

‡ Baillé, *Thèse de Paris*, 1889, and *Bull. de Thèr.*, 1889, t. cxvi. p. 160.

This is, then, a plant which deserves a permanent place in our materia medica as one of the most powerful agents which we have for the treatment of chronic diarrhœa. It is worthy of mention that the resin, which constitutes the essential part of this plant, makes it well adapted, like the other balsamics, to the treatment of urinary and pulmonary affections. We may even utilize its properties as a dressing for wounds, employing the tincture for this purpose. Unfortunately, the *Hysterionica Baylahuen* remains a scientific curiosity, for, save the supply sent to me by Cervello, of Valparaiso, there has never been a shipment of this drug to our country.

The second group of means to employ for the obtention of intestinal antisepsis comprehends, as we have said, purgatives. The group of purgatives remains what it was when I published the third edition of my "New Medications." I there called attention to *Cascara sagrada*, the study of which my pupil Eymery had made in my service.*

Since this publication, the first made in France on cascara, this medicament has taken a permanent place in current therapeutics, and subsequent facts have only confirmed the researches which I had undertaken with the *Rhamnus purshiana*.

We have been less successful with another plant, which was sent me by Dr. Pedro Acouna, of Catamarca, and which bears in the country the name of *piligan*. Dr. Blondel established the botanical species of this plant, and found that it belonged to the Lycopodia. Adrian and Bardet discovered an alkaloid there which they called *piliganine*. The trials which we have made at the hospital have shown us that piligan contains, besides piliganine, a resin which is highly purgative, while the aqueous extract which contains the piliganine is emetic. But the toxicity of this piliganine is so great that I think it hardly safe to use it in ordinary practice as an emeto-cathartic.

The purgative waters are coming more and more into general use, and it must be admitted that they constitute one of the best agencies for the treatment of constipation and its evils.

To the French waters of Montmirail-Valqueiràs, to the Hungarian purgative waters so widely known, has recently been added a mineral water which seems to be much the most concentrated of all the purgative waters; it is a Spanish water, like Rubinat, and exclusively sulph-sodic, but much stronger than the Rubinat. I allude to the Villacabras spay, near Madrid, which contains 91 per 1000 of sulphate of sodium, while the Rubinat contains only 72 per 1000.

In certain cases there is an advantage in substituting for the natural or artificial saline waters an association of laxative ingredients, more or less complex, in the form of purgative pills or powders. The formula which I ordinarily use is the following. (The senna-pods should, when possible, be used in preference to the leaves.)

℞ Senna-pods, pulverized and washed with alcohol,
Sublimed sulphur, āā grammes vi (gr. xc);
Pulv. fennel,
Pulv. anise, āā grammes iii (gr. xlv);
Pulv. cream of tartar, grammes ii (gr. xxx);
Pulv. licorice, grammes viii (ʒii);
Pulv. sugar, grammes xxv (ʒvi¼). M.

Sig.—One or two teaspoonfuls, stirred in a little water.

Such are the several indications which I desired to present in reference to purgatives, and must refer you for a more special consideration of this subject to my "Diseases of the Stomach and Intestines;" and I come now to the third order of means to be employed in diarrhœa as in constipation; I refer to lavage of the stomach and intestine.

In cases of constipation I need not tell you the advantages to be obtained from rectal irrigations; simple lavements or purgative lavements have a *rôle* of considerable importance. But I must especially insist on the good effects to be derived from lavage of the stomach when there exists an intestinal obstruction. We have here an excellent method, which, if it does not act on the strangulation and its cause, protects the economy from the dangers of poisoning by the toxines accumulated in the digestive tube, in enabling us to remove such as come from the stomach or have flowed from the intestine into the stomach.

But it is especially in the putrid and infectious diarrhœas that antiseptic lavages of the intestine may give us good results. It is well to make use of antiseptic solutions of boric acid (ten per thousand) or of naphthol (one per thousand), and throw these solutions as high up as possible. You will accomplish this by abandoning the rectal irrigator, and by using the ordinary tubes for lavage of the stomach, and especially the Debove tube, whose pliant but sufficiently rigid extremity permits of easy introduction

* Eymery, *Thèse de Paris*, 1884.

into the rectum. Then, by filling the funnel and raising it to a suitable height, the liquid is made to penetrate the intestine as far up as you desire, and by these antiseptic means you will avoid all the accidents which arise from putrid diarrhœa.

There are even certain forms of cancer of the rectum, extremely slow in their progress, like those carcinomata of the uterus or breast which last ten to fifteen years without producing cachexia; these cancers, which do not completely obliterate the lumen of the intestines, may be treated by purgatives, by lavages of the intestine, and by a vegetarian regimen, and under this form the antiseptic medication is quite applicable, and even enables the patient to grow fat and to live with relative comfort, though a subject of incurable lesions. I have had a number of examples of this sort under my observation.

Lastly, we come to the matter of dietary regimen. Here we have to study its relation, first, to diarrhœa, and, secondly, to constipation. In the treatment of diarrhœa, milk, I hardly need tell you, is one of the most precious of aliments, especially in chronic diarrhœa; in fact, on milk diet we rely. At the same time, there are some persons in whom milk provokes diarrhœa, or in whom milk alone does not suffice to cure the diarrhœa. In these cases, without abandoning the milk, it is necessary to add lime-water.

By the side of milk we must place the vegetarian diet, and I am in the habit, in treating the chronic diarrhœas due especially to residence in warm climates, to follow this method: I begin by putting the patient on an exclusively milk diet, with or without lime-water; then, at the end of a certain time, I give the yelks of eggs in milk or chicken-broth, or raw eggs right from the shell, or even American cream. You know that by this word we designate the following preparation: The yelks of two eggs beaten with fine sugar, and a few drops of rum or Spanish or Sicilian wine; the eggs are eaten in this state without any water and without being cooked.

Then I allow amylaceous substances, which I prescribe under the form of pea soups, stews of potatoes, lentils, beans, gruels, and puddings of wheat flour, rice, barley, Indian meal, oatmeal, rice under all its forms, strained panada, racahout,* lactated farina, and even the sweet revalescière,† which, notwithstanding all the advertising bluster associated with it, constitutes a pretty good alimentary mixture. Lastly, you can order the various hard biscuits (some patients do very well for a time on pilot-bread), macaroni, and other of the alimentary pastes of commerce.

If all these substances are well supported, I then allow other kinds of food, such as green vegetables thoroughly cooked, stewed carrots, turnips, beets, green peas, Julienne soup; and it is only when these articles of diet have been found to agree that I permit meats, and I always begin with those that are thoroughly cooked, such as stewed chicken, beef *à la mode*, calf's foot jelly, fowls well seasoned, and it is not till the patient is, so to speak, well, that I let him have underdone meats.

This is an order which is rarely followed, for practitioners are very apt to begin with meat, or to put their patients on raw meat, after first confining them for a day or two to milk diet. This method, excellent in the case of children, is less applicable to adults. Moreover, it is necessary to understand what is meant by this word diarrhœa, and it seems to me important to distinguish diarrhœas having their origin in the stomach and small intestine from those which are due to a morbid state of the large intestine. The first only are amenable to a dietetic treatment; on the second the influence of diet is very much less marked, and here we must rely on lavages and other local means.

I have just alluded to the diarrhœa of children. The subject of infantile diarrhœa constitutes a large chapter, which I cannot touch upon here. Nevertheless, I desire to call your attention to the happy effect of lactic acid in the green diarrhœa of infants, which, as the labors of Damaschino, of Hayem, and of Lesage have shown us, is a microbic diarrhœa. You will administer the lactic acid in a two per cent. solution, of which you will give a dessertspoonful every two hours:

℞ Acid lactic, grammes iii (gr. xlv);
Orange-flower water, grammes xxx (℥i);
Linden-water, grammes cxx (℥iv). M.

It remains for me, before finishing this lecture, to speak of the diet most suitable for the constipated. In my "Diseases of the Stomach and Intestines" I have devoted an

* Contains salep, cocoa, sweet acorns, potato starch, rice flour, sugar, and vanilla.

† A mixture of lentil flour, Indian meal, pea flour barley flour, common salt.—Tr.

entire chapter to this subject, to which I would refer those who wish to study the dietetic principles applicable to constipation. At the same time I ought to allude here to the new acquisitions which have been made to the alimentary regimen of the constipated.

To the bran bread, and to the rye and Graham bread heretofore employed, should be added soja bread. When I was speaking of this Japanese bean, in my first lecture, I told you of the purgative oil which it contains, and which is got rid of to a greater or less extent in bread-making. But this separation is never sufficiently complete to deprive this soja bread altogether of its purgative action.

Lecerf's bread, taken in too great quantity, is really purgative, and that of Bourdin, of Rheims, which contains both gluten and soja not freed from its oil, is still more laxative, and if it were not for the rather rank taste of these sorts of bread, we should have here, it must be confessed, one of the most active agents for the treatment of habitual constipation.

A vegetable diet is not without influence on the constipated. While a diet more or less exclusive of animal food gives hard and scanty fæces, it is altogether different with a vegetable diet, which furnishes soft and pasty fæces, like those of the herbivora.

It is, then, necessary, in the dietary of the constipated, always to give predominance to the vegetarian regimen, which, as you see, plays a considerable *rôle* in the treatment of diarrhœa and constipation, as it is applicable to both of these states of the digestive tube.

This alimentary regimen, in fact, promotes abundance of stools in cases of constipation, and it has a favorable influence in cases of diarrhœa in calming the irritation and inflammation of the digestive tube, which characterize chronic intestinal fluxes; and I shall endeavor to show you in my next lecture that this influence is equally great in another affection,—renal insufficiency.

THE ACTION OF CAFFEINE ON THE CIRCULATION.

By Edward T. Reichert, M.D.*

COFFEE and its two conceded active principles—caffeine and the oil of coffee—are generally believed to act as stimulants to the circulation, increasing the force and frequency of the pulse and the amount of work performed by the heart, yet the evidence upon which this is founded is far from convincing, there being but few cases of poisoning on record, the actions of therapeutic doses having been but little studied, and the results of experiments on the lower animals insufficient and conflicting.

Curshmann (*Deutsche Klinik*, 1873, s. 377) records that in the case of a young woman who attempted to commit abortion by drinking a decoction made from 250 grammes of coffee, the pulse-rate was increased to 112 per minute, the beats were augmented in strength even to a degree of violence, and the arterial tension increased. In another instance ("Memorabilien," Von F. Betz, Heidelberg, 1877, s. 494), a woman, 30 years of age, after taking two doses of caffeine of .24 gramme (4 grains) each, there ensued palpitation, decided præcordial distress, frequent pulse, and abdominal pulsation. Frerichs Wagner's 'Handwörterbuch d. Physiologie," Bd. iii. s. 721) found, after a dose of 1.5 grammes of caffeine, that the pulse in fifteen minutes was full and hard, and the number increased from 70 to 80 per minute. Similar effects were observed by the students of Lehmann (*Physiologisches Chemie*, i. s. 151) after taking from .3 to .6 gramme. In a case of poisoning in an adult, who took a drachm of the citrate, Routh (*London Lancet*, 1883, i. p. 680) noticed giddiness and faintness, followed by collapse and great cardiac prostration. Caron (quoted by Leven) found that after a dose of .5 gramme the pulse was diminished from 80 to 50 beats per minute. Marvaud ("Les Aliments d'Épargne," Paris, 1874, p. 308) states that sphygmographic curves, obtained after giving a distillate from coffee, indicate increased tension of the vessel walls, and Méplain (*ibid.*) asserts that the pulse is increased and the vascular tension diminished. These records certainly indicate that coffee and its active principles notably increase the pulse-rate, although occasionally, as in Caron's case, diminish it, but there is no clear evidence of an increase in the amount of work performed by the heart.

Experimental studies on the lower animals furnish results which are not as uniform, although the differences are to some extent due to the methods and dose employed. Voit ("Untersuchungen," München, 1860) states that the pulsations of the frog's heart are first increased, then followed by a gradual and progressive slowing, attended with irregularity, and finally ceasing. Stuhlmann and Falck

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(*Archiv f. Path. Anat.*, Bd. xi. s. 324), Johannsen ("Inaug. Dissert.," Dorpat, 1869), and Aubert and Hasse (*Pflüger's Archiv f. Physiologie*, Bd. v. s. 589) obtained similar results, although they are far from being uniform even in the records of the different individuals. In experiments in connection with the work performed by the frog's heart, Maki ("Inaug. Dissert.," Strasburg, 1884) found, with the aid of a Williams's apparatus, that the pulse was variously affected, and that in most of his experiments the blood-pressure was decreased and in a few increased, thus indicating that generally less work was accomplished. With the heart of the terrapin, Beyer (*Amer. Jour. Med. Sciences*, 1885, ii. p. 71) obtained varying results, depending upon the size of the dose. Small doses increased the force of the heart's contractions and arterial pressure, while large doses diminished both. Hare and Marshall (*Philada. Medical News*, 1888, p. 337), in experiments with the oil of coffee, found that minute amounts increase the pulsations in the cut-out heart, and that large doses cause them to become slower and weaker, and finally arrest the heart in diastole.

On the circulation in mammals but little valuable work has been done. Magendie was the first to state that when an infusion of coffee was injected into the jugular vein of a dog the arterial pressure was increased. Leven (*Archiv. de Physiologie Norm. et Path.*, 1868, p. 183) made two experiments on normal animals,—one on a cat and the other on a dog. In the first, .05 gramme was hypodermically injected. Before the injection the arterial pressure varied between 12.5 and 13.5 [centimetres]. Twenty minutes after the injection the pressure was elevated to 15. In the dog a similar dose was given. Before the injection the pressure varied between 9.5 and 10.5, and twenty minutes after was 16. In two other experiments, in which both pneumogastric nerves were cut, in a cat the pressure rose from 12 to 16 in twenty minutes after the injection, while in a dog the pressure rose from 11 to 16 in eighteen minutes, and the heart-beats were increased from 184 to 204. Aubert and Hasse (*loc. cit.*), in experiments on rabbits and dogs, found, as a characteristic effect of the intravenous injection of a one or two per cent. solution of caffeine, an increase in the pulse-rate, with lessened height of the curves, and a diminution of blood-pressure. The results on arterial pressure were not by any means uniform, although the injections were usually immediately followed by a diminution in pressure, which rapidly returned towards the normal, or even above it. Accompanying the diminution of pressure, the pulse-curves were generally smaller and the heart-beats more frequent. Their experiments are deprived of much value, however, because in all of them the animals were either curarized and kept alive by artificial respiration, or else were under the influence of morphine, or chloral, or both, and in one experiment all three were used. Maki (*loc. cit.*) also made experiments in which the animals were under the influence of atropine or chloral. He found that large doses of caffeine were always followed by a diminution in blood-pressure. Binz (*Archiv f. Exp. Path. u. Phar.*, Bd. ix. s. 38), in two experiments on small dogs, which were rendered stupid with alcohol, in one of which the pneumogastric nerves were cut, found in both that the hypodermic injection of caffeine was followed by a rise in arterial pressure and an increase in the pulse. With a distillate from coffee, made up largely of the oil, he records that in a dog the pulse was increased and pressure diminished. Hare and Marshall (*loc. cit.*) state that the pure oil of coffee, when injected into the jugular vein of a dog, causes an increase in the pulse-rate, a lowering of arterial pressure, and an arrest of the heart in diastole.

The drift of the above records indicates that the characteristic actions of coffee, or of its active principles, are to cause an acceleration of the pulse and a diminution in blood-pressure, but it is evident that we are not justified in forming any final conclusions. Moreover, it is by no means clear how the influences of these substances are exerted. In the present experimental inquiry an endeavor has been made to obtain some decisive information on these points. Healthy dogs were used, and a warm solution of caffeine*—of from two and a half, five, or ten per cent. strength—was injected into the external jugular vein, excepting in the last series of experiments, when it was given hypodermically. The carotid artery was always connected with a mercurial manometer, and graphic records made of the pulse and pressure. The time occupied in giving an intravenous injection was from ten to fifteen seconds, the time marked on the records denoting the end of the injection. The pulse-rate was counted for ten seconds, and the number per minute estimated from

* The caffeine used is the article of commerce, and undoubtedly prepared from tea-leaves, and is consequently theine, as is all the so-called caffeine.

this. The blood-pressure was measured in millimetres.

The first series of experiments embraces six on normal animals, the records of which are here condensed in tabular form :

FIRST SERIES.—*Normal Animals.*

Experiment 1.—Dog ; weight, 5.328 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	126	140	
.10	...	...	Injected 1 c.c., 2½ per cent. solution.
.40	114	140	
1.40	114	148	
3.40	102	142	
5.40	112	...	
.50	...	...	Injected 2 c.c.
6.00	117	106	
7.00	90	138	
8.00	91	132	
12.00	102	142	
14.00	102	138	
.20	...	...	Injected 5 c.c.
.30	282	92	
.35	...	...	Sudden heart-failure.

Experiment 2.—Dog ; weight, 5.442 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	174	162	
.30	...	...	Injected 3 c.c., 2½ per cent. solution. Pulse quickened, but struggles interfere with the tracing.
.50	...	134	
2.00	198	161	
4.20	190	162	
.22	...	...	Injected 3 c.c. Pulse instantly increased.
5.30	224	149	
7.30	184	161	
9.30	162	162	
11.00	159	160	
13.00	162	154	
.30	...	...	Injected 3 c.c. Pulse becomes very rapid and pressure falls.

Experiment 3.—Dog ; weight, 5.555 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	114	184	
.15	...	...	Injected 2 c.c., 5 per cent. solution.
.30	312	124	
1.30	258	174	
3.30	168	186	
6.00	132	168	
9.00	144	176	
.05	...	...	Injected 1 c.c.
.15	228	136	
11.00	150	160	
15.00	135	160	
22.00	135	142	
24.00	...	...	Injected 2 c.c.
.30	426	126	
25.15	...	...	Sudden heart-failure following a slowing of the rapid pulse.

Experiment 4.—Dog ; weight, 6.575 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	102	160	
.25	...	...	Injected 7 c.c., 5 per cent. solution.
1.00	312	92	
.20	276	170	
3.20	132	170	
7.20	102	148	
14.00	93	138	
16.00	88	144	
.15	...	...	Injected 7 c.c.
.35	294	90	
18.00	318	147	
22.00	258	162	
24.30	264	158	
.40	...	...	Sudden heart-failure.

Experiment 5.—Dog ; weight, 15.419 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	156	156	
.20	...	...	Injected 3 c.c., 5 per cent. solution.
.40	180	130	
1.20	252	161	
3.20	192	168	
5.20	168	160	
7.00	168	160	
.12	...	...	Injected 3 c.c.
.20	198	120	
8.20	174	168	
10.20	156	168	
11.50	126	160	Killed.

Experiment 6.—Dog ; weight, 5.5 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	165	150	
.15	...	...	Injected 1 c.c., 10 per cent. solution, causing struggles and an irregular tracing.
2.00	150	160	
3.00	126	164	
.10	...	...	Injected 3 c.c.
.35	216	104	
4.30	...	122	
5.30	...	148	
6.00	...	152	
.40	...	...	Dead. The pulse remained very rapid since 3.35, but was not countable, owing to muscular movements in the animal.

In Experiment 1 the first injection of 1 c.c. of a two and a half per cent. solution was followed by a distinct diminution in the pulse-rate, attended with an increase in the height of the curves, and a slight increase in blood-pressure. A second injection of 2 c.c. caused a further decline in the pulse-rate, with also a fall of pressure. A rise of both then occurred, but at the end of the fourteenth minute the pulse was 24 beats below normal and the pressure about its normal standard. The injection then of 5 c.c. caused an enormous increase in the pulse, nearly trebling it, and which was accompanied by a decided fall of pressure, and followed in fifteen seconds after the conclusion of the injection by sudden heart-failure. In Experiment 2 the injection of 3 c.c. of the same strength of solution caused a quickening of the heart-beats and a temporary fall of pressure. The injection of a second and similar dose was followed by a further increase in the pulse and another decline of pressure. The pulse-rate then gradually diminished, falling below the normal at the ninth minute, while the blood-pressure was normal. At the thirteenth minute both pulse and pressure were distinctly subnormal. The injection then of 3 c.c. caused the heart-beats to become exceedingly rapid with low curves, the pressure rapidly fell, and death resulted from heart-failure. In Experiments 3, 4, and 5 a five per cent. solution was used. The results of the observations are quite uniform and characteristic, and exhibit the much more powerful influence of larger doses. In each, immediately after the first injection, an enormous increase in the pulse occurred, the curves were small, and the blood-pressure decidedly lowered. The heart-beats then became fewer, gles, which caused such an irregular tracing that no fair estimate could immediately be made of the pulse and pressure, but in the course of a couple of minutes the pulse-rate was found to be diminished and the pressure to be increased. The injection at the third minute of 3 c.c. induced a marked increase in the pulse-rate, with a rapid and decided diminution in pressure. After 3.35, muscular disturbances in the animal were so marked that no estimate of the pulse could be made. The heart's action was, however, very rapid. At 6.40, the heart-beats became suddenly slowed and cardiac failure ensued.

The results of these experiments show that the heart may be slowed or quickened in its action, that generally the pulse-rate is notably increased with low pulse-curves, and that the frequent pulse is accompanied by a diminution of blood-pressure. If the dose is sufficient, blood-pressure is primarily diminished; this is followed by a reaction, so that a point is reached which is slightly above normal. The immediate effects of larger doses are notably more intense, the repetition of small doses, or the injection of a single large dose, causing a remarkable increase in the heart-beats and a rapid, well-marked fall of pressure. It will also be observed that in several of the experiments a sudden heart-failure occurred.

We have, therefore, to determine the cause of the slowing or quickening of the pulse, of the immediate fall of pressure, of the increase of pressure, and, finally, the significance of the sudden heart-failure.

Alterations in the pulse-rate are to be attributed to an action exerted through the cardio-inhibitory apparatus, the accelerator apparatus, or a direct action on the heart-

Blood-pressure and pulse-tracing showing the effects of the intravenous injection of 2 cubic centimetres of a five per cent. solution of caffeine. Larger doses cause a greater diminution of pressure, which continues for a longer time.

and the pressure recovered, going slightly above normal. A second injection again increased the pulse and diminished pressure. In Experiment 6 the injection of 1 c.c. of a ten per cent. solution was followed by strug-

muscle or its contained ganglia. A depression of any part of the former, other things being equal, would give rise to an increase in the number of heart-beats with lower curves while a stimulation to the opposite effects.

In order to determine whether any influences are exerted through this portion of the nervous mechanism, a second series of experiments was made, in which the cardio-inhibitory nerves were cut, thus severing the connection between the cardio-inhibitory centres in the medulla oblongata and the heart. It is obvious that, should the quickening of the heart be due to depression or paralysis of these centres, or the slowing of the heart to a stimulation, the same effects would not be observed in this series. The enormous increase in the pulse-rate which was observed in the first series is far in excess of what could alone be produced by complete paralysis of the entire cardio-inhibitory apparatus, but there are also running with the cardio-inhibitory fibres a few which carry accelerator impulses, and which may at the same time be in a condition of increased activity. As animals breathe with great difficulty after section of the pneumogastric nerves, in which the cardio-inhibitory fibres run, a canula was in each instance inserted in the trachea.

The second series comprises four experiments, a five per cent. solution being used in each. Only two of the experiments are here given, the other two are confirmatory.

SECOND SERIES.—*The Pneumogastric Nerves cut.*

Experiment 7.—Dog; weight, 4.875 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	210	166	
.10	...	124	Injected 1 c.c., 5 per cent. solution.
.20	198	140	
1.00	228	158	
3.00	228	160	
5.00	228	158	
.10	...	...	Injected 2 c.c.
.20	276	88	
8.00	240	186	Struggles and general muscular disturbance cause the rise of pressure.
13.00	228	137	
.20	...	...	Injected 1 c.c.
.40	252	94	
16.00	228	129	
18.00	216	128	
.10	...	...	Injected 1 c.c.
.30	234	79	
22.00	228	90	
28.00	246	84	
35.00	276	60	Pressure gradually fell and heart failed. Death in 39 minutes.

Experiment 8.—Dog; weight, 25.179 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	159	170	
.15	...	...	Injected 2 c.c., 5 per cent. solution.
.30	162	132	
1.30	166	164	
4.30	159	146	
10.30	156	138	
12.30	151	137	
.40	...	...	Injected 2 c.c.
.50	168	118	
15.00	150	138	
19.00	...	...	Injected 2 c.c., followed by struggles.
20.00	186	144	
25.00	156	132	
28.00	...	...	Injected 2 c.c., followed by struggles and other muscular disturbance which cause an increase in pressure.
28.30	204	156	
30.30	...	...	Injected 5 c.c., causing in 40 seconds sudden cardiac arrest.

It will be observed from these records that, while the effects on the pulse after section of the cardio-inhibitory fibres are the same qualitatively as in normal animals, the increase is by far from being as great. In Experiment 7 a slight momentary decrease followed the first injection; the pulse then went above normal, and remained in excess throughout the experiment, each injection causing a well-defined but temporary exacerbation. In Experiment 8 but little change was observed, save at the twentieth minute after the third injection, and at the twenty-eighth minute following the fourth injection. In this experiment the heart-beats for some time showed a distinct tendency to remain subnormal, but, as in normal experiments, a sufficient quantity of caffeine caused an increase. The other two experiments are nearly the counterparts of these.

These results show conclusively that, while caffeine still increases the heart-beats after section of the pneumogastric nerves, it is not as powerful in this action as before. Since these nerves contain also accelerator fibres, it may be that the less marked results are due, not to a depression of the cardio-inhibitory centres, but to the interference of the passage of accelerator impulses for the accelerator centres. Accelerator fibres run to the heart in two paths, a few of these only going through the pneumogastric nerves, the others taking a course through the cervical portion of the

spinal cord. To determine what influence may be exerted by these accelerator centres, a third series of experiments was performed, in which both the pneumogastric nerves and the spinal cord in the upper cervical region were cut, thus isolating the heart from any direct central nervous influence.

The third series embraces four experiments, which are reciprocally confirmatory. The records of two of the experiments are here given. The operations were performed about a half-hour before the observations were begun, and the animals were kept alive by artificial respiration.

THIRD SERIES.—*The Pneumogastric Nerves and Spinal Cord cut in the Upper Cervical Region.*

Experiment 9.—Dog; weight, 3.413 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	234	83	
.10	...	...	Injected 1 c.c., 5 per cent. solution.
.40	246	51	
2.00	276	80	
4.00	264	85	
5.00	258	83	
.10	...	...	Injected 1 c.c.
.30	...	62	
6.30	270	71	
12.00	264	81	
.10	...	...	Injected 1 c.c.
.30	294	71	
15.00	282	75	
22.00	276	51	
36.00	270	34	Killed.

Experiment 10.—Dog; weight, 12 kilos.

Time. min. sec.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.00	141	72	
.10	...	...	Injected 2 c.c., 5 per cent. solution.
.30	147	52	
1.30	...	64	
.40	...	...	Injected 5 c.c.
2.00	177	58	
4.00	159	60	
.10	...	...	Injected 5 c.c.
.30	155	60	
5.00	180	76	
6.00	180	74	
.10	...	...	Injected 5 c.c.
.30	195	62	
8.30	198	64	
9.00	...	...	Injected 5 c.c.
.30	218	54	
11.30	...	...	Killed.

In this series no essential differences are observed from the records of the preceding one, hence it is evident that caffeine does not act upon the accelerator centres. Since in this series the heart is isolated from its extrinsic nervous mechanism, it is evident that any changes which ensue in its pulsations would be due to a direct action on this organ. The beats are still increased in frequency, but yet not to so marked an extent as when the cardio-inhibitory apparatus is intact. Accordingly it is clear that the acceleration of the pulse is due to a depression of the cardio-inhibitory centres in the medulla oblongata and to a direct action on the heart.

The acceleration of the heart-beats, which is dependent upon direct cardiac action, may be due to an action on the heart ganglia or the heart-muscle. The increase is due largely or wholly to a depression of the cardio-inhibitory fibres or ganglion, for I have found during the progress of the poisoning that this portion of the inhibitory apparatus becomes less and less excitable to electrical stimulus, and that upon the approach of death no inhibition of the heart can, as a rule, be produced even by strong currents. The intensity, however, with which this drug acts upon the cardio-inhibitory apparatus varies considerably. In some animals it is greatly depressed from the first, in others but little affected, and in some instances will respond as long as the heart pulsates, although greatly enfeebled. It therefore seems evident that the increased frequency of the heart is due to a depression of the cardio-inhibitory centres in the medulla oblongata and in the heart.

It is a matter of great therapeutical importance to determine what significance is to be attached to the quickened heart-beats,—whether this change means a stimulant or depressant action. It will be observed from the statements recorded in the early part of this paper, that the frequent pulse has been looked upon as indicating a stimulating effect, and, indeed, the drug is sometimes classed as a cardiac stimulant. An increase in the pulse-rate, however, is far from possessing by itself any positive proof in this respect, since a depression of the heart may be manifest in either increased or diminished action, the work which the organ accomplishes alone determining whether acceleration means stimulation or the opposite. If we compare in the above records the pulse-rate and blood-pressure, it will be found that when the heart-beats are the most frequent the pressure is lowest; hence the increased action of

the heart is concomitant with subnormal pressure. This diminution of pressure cannot be due to any action exerted through the cardio-inhibitory nerves, since it is not accompanied by a slowing of the heart, and as it is observed after section of these nerves. It is also clear that the vaso-motor centres in the medulla oblongata are not accountable, because, as is shown in the third series, the same changes occur after their destruction. Associating, therefore, the quickened beats and diminished pressure, as in the third series, where the heart is isolated from its extrinsic mechanism, it is evident that caffeine acts as a direct depressant to the heart, increasing the number of pulsations but diminishing their efficiency, and thus lessening the actual amount of work performed. We are not without further proof that the heart is weakened, as is evident in the cases reported by Betz and Routh, and as is substantiated by the results of autopsies on dogs killed with caffeine, in every case this organ being found arrested in diastole. The work of Hare and Marshall with the oil of coffee shows that this substance causes the same result.

The slowing of the pulse is, doubtless, dependent upon two factors,—a primary stimulation of the cardio-inhibitory apparatus and a direct depressant action on the heart. When a diminution of the heart-beats follows a very small dose, and is antecedent to the decided increase observed when the animal is thoroughly under the influence of the drug, the change is likely due to a primary stimulation, by which the heart is slightly inhibited. In such a case, the fewer beats would be accompanied by higher curves and no decided change in the amount of work performed, thus showing that the efficiency of the heart's action was not injured. In Experiment 1 is a good illustration of this probable action. Up to the time of the last injection (14.20) the pulse-rate was below normal. Blood-pressure was not notably affected until this time, excepting after the second injection, immediately after which a notable transient fall occurred, accompanied by a trifling increase in the pulse. The heart-beats were less efficient, as was shown in the lessened height of the curves, indicating that the muscular power was diminished and that the work accomplished was lessened. The heart-beats then became slower, and with this change ensued more effective action and increased work. The last injection, however, was sufficient to bring about an immediate depression of the cardio-inhibitory apparatus, thus enormously increasing the number of pulsations, and in fifteen seconds after the dose the heart suddenly ceased its action, completely paralyzed. A slowing of the heart-beats is, however, not commonly observed until immediately before death, when it gradually diminishes in number, and is accompanied by a fall of blood-pressure, the two progressing *pari passu*, the pressure finally reaching zero, and the heart being arrested in diastole. Such diminutions in the pulse are observed in the isolated heart.

It is very evident from this that the actions of caffeine on the pulse-rate are of much complexity, small doses tending to diminish the frequency by a stimulation of the inhibitory apparatus, and large doses to cause an increase by a depression or paralysis of the inhibitory apparatus, and to cause a diminution by direct depression of the heart. Accordingly, it is obvious that we have at times opposing factors in action; hence, whether an increase or a diminution will prevail, will depend upon the relative intensities of the conflicting forces. The fact that the direct action of the drug in toxic amounts upon the inhibitory ganglion in the heart tends to cause an increase, and that the direct action on the muscle tends to diminish the beats, and that one or the other may be the more intense, affords a perfect explanation of the conflicting results obtained by some of the investigators alluded to in their experiments with the isolated heart of the batrachian.

In certain instances it will be observed that the arterial pressure goes slightly above normal. This change is rarely associated with corresponding alterations in the heart's action, and while it may at times also be due to struggles, it occurs entirely independently, and is seen in animals rendered motionless with curare. This indicates that the increase is due to an action on the vaso-motor system. It is well known that caffeine acts as an excitant to voluntary muscular fibres, and I have found that it increases peristalsis. It is likely that this action is also extended to the contractile element of the blood-vessels. This slight increase of pressure is observed even after destruction of the vaso-motor centres in the medulla oblongata, it cannot be definitely traced to alterations in the heart-beats, it is not due to struggles in the animal, since it occurs in the curarized condition, and hence is, doubtless, dependent upon a direct action on the vessel walls. This conclusion receives support in the evident condition of

vaso-motor paralysis, which is finally observed in animals long under the influence of toxic doses. Thus caffeine would act primarily as a direct excitant and secondarily as a direct depressant to the contractile tissue in blood-vessel walls. That such changes occur seem further sustained by the observations on man noted in the early part of this paper, which indicate that an increased degree of tension of the arterial walls is sometimes distinct, and also by the researches of Phillips and Bradford (*Journal of Physiology*, viii., 1887, p. 117) on the kidney, in which the blood-vessels were found primarily constricted. Roy and Sherrington (*Journal of Physiology*, xi., 1890, p. 98) state, as a result of direct experiment, that therapeutic doses of caffeine cause in the cerebral vessels a slight primary expansion, then a slight transient contraction, which is followed by a persistent and well-marked expansion. These changes were the reverse of what took place in the systemic vessels in general, hence the most marked action on the capillaries, as a whole, would be to cause a persistent and well-marked constriction.

The actions, therefore, on blood-pressure are also complex: there is a tendency to increase the pressure by a primary direct stimulant action on the blood-vessel walls; and an action to diminish pressure by a depression of the heart's energy, and a secondary paralysant action on the vessel walls causing vascular dilatation.

It is a matter, doubtless, of much clinical importance to note that in a number of my experiments a sudden heart-failure occurred at a time when the circulation was well maintained. While in some instances this can be attributed as an immediate result of an intravenous injection of the drug, in others it is clearly not. For instance, in Experiment 4, it will be observed that the pressure was but two millimetres below normal, the heart-beats were increased in frequency from 102 to 264 pulsations per minute, no caffeine had been given for eight minutes, yet in a moment, without any warning or apparent cause, the heart ceased beating, and upon an immediate autopsy was found in diastole and unirritable. These remarkable results indicate that caffeine, or coffee in large quantity, may prove of great danger in cases of cardiac weakness by inducing sudden failure.

In the experiments conducted on mammals by different investigators, with the exception of those by Binz and Leven, the drug was intravenously injected. These two gave the caffeine hypodermically, and while they found that the pulsations of the heart were decidedly increased they also state that the arterial pressure was similarly and notably affected. Since the results of my own experiments are in accord with those of Aubert and Hasse, it was thought that the method of administration might be accountable for this curious difference. Consequently, I was led to make a fourth series of experiments, in which doses generally similar to those used by Binz were administered under the skin. Four experiments were made, and the results of two are given in detail:

FOURTH SERIES.—*Caffeine injected Hypodermically.*

Experiment 11.—Dog; weight, 9.183 kilos.

Time. hrs. min.	Pulse per minute.	Mean pressure m.m.	Remarks.
.0	90	154	Injected hypodermically 9 c.c., 7 per cent. solution.
.5	93	154	
.9	99	158	
.12	102	154	
.15	117	156	
.20	90	154	
.25	98	156	
.30	97	156	
.40	104	144	
.55	99	132	
1.10	...	...	Injected 15 c.c. in three places.
.15	148	128	
.20	168	132	
.30	186	132	
.35	246	92	Animal killed.

Experiment 12.—Dog; weight, 5.214 kilos.

Time. hrs. min.	Pulse per minute.	Mean pressure. m.m.	Remarks.
.0	126	146	Injected hypodermically 16 c.c, 7 per cent. solution.
.3	150	136	
.7	141	134	
.10	146	134	
.12	128	130	
.15	126	130	
.17	132	130	
.20	126	130	
.23	126	128	
.28	126	127	
.35	132	123	
.40	135	118	
.45	132	106	
.55	126	100	
1.00	126	81	Animal killed.

In all four experiments the doses were fatal, although the animals were not allowed to live beyond the period necessary for the

purposes of the observations. In three of them the pulse was increased to a variable extent; but, on the whole, to a far less degree than when the drug is intravenously injected. In the fourth experiment the pulse was subnormal throughout, and in Experiment 12 above recorded the increase was not great. The blood-pressure in all four experiments never went to an appreciable amount above the normal; indeed, never more than observed in perfectly normal animals without any drug; but, on the other hand, invariably showed a definite and decided tendency to a progressive decline during the progress of the observations. It is impossible to harmonize these results with those of Binz and Leven. Binz made but two experiments, in one of which the pneumogastric nerves were cut; in both the animals were profoundly under the influence of alcohol, which certainly vitiates the results. Leven made four experiments,—two on normal animals and two in which the pneumogastric and cervical sympathetic nerves were cut. In all of these only two records in each were made,—one before and the other after caffeine. His measurements, if made in centimetres of mercury, indicate that the pressure obtained before giving caffeine was in every case much lower than the average, and it is probable that when these primary records were made the animals had not entirely recovered from the effects of chloroform, which was probably used to anæsthetize the animals for the operation, and which caused a diminution of pressure, which continued at that time.

From the above records the following conclusions are deduced:

1. The pulse-rate may be diminished during the first and last stages of the poisoning, but is generally decidedly increased. During the first stage the diminution is due to a stimulation of the cardio-inhibitory centres in the medulla oblongata and heart, and during the last stage to a direct depression of the heart. The increase in the pulse-rate is due to a depression or paralysis of the above cardio-inhibitory centres.

2. Arterial pressure during the first stages of poisoning is generally unaffected or diminished, but occasionally a trifling increase is noted; during subsequent stages it is diminished. The increase is due to a direct stimulant action upon the blood-vessel walls, increasing vascular tension. The diminution is due chiefly to a direct depression of the heart, and to some extent, doubtless, to a secondary paralysant action on the vessel walls.

3. The acceleration of the heart-beats may be accompanied by no appreciable alteration in blood-pressure, but generally by a more or less decided diminution, which is dependent upon cardiac depression.

4. Caffeine diminishes the heart's efficiency for work, arrests it in diastole, sometimes induces sudden paralysis, and is, therefore, a cardiac depressant.

5. The asserted stimulant action upon the circulation is, doubtless, subjective, and dependent upon an excitation of the cerebral centres.

ALKALOIDAL STRYCHNINE IN EFFECTIVE AND CONTINUED USE UNSAFE.

STRYCHNINE SULPHATE NON-CUMULATIVE. A REPLY TO H. F. MEIER.

By Henry M. Field, M.D., Newton, Mass.

THE March issue of the Therapeutic Gazette contains a *critique* upon a section of my paper published in the January number, in which strychnine, alkaloid and salt, was discussed. The spirit and language of this review by Mr. Meier are so courteous as to suggest a most courteous treatment both of himself and his strictures; none the less, I believe, that the interests of practical medicine demand from me a plain and pointed reply. And first, Mr. Meier does not make himself altogether clear, at least to my own comprehension, in some points of his discussion; and where his meaning is obvious enough, more than once, in my belief, his assertions and conclusions are calculated to lead the practitioner astray. As an illustration of obscurity, I need but point to a portion of the first paragraph of his article (I will not take space to quote in full) beginning, "The physician with his accumulated experience;" and so continuing to the close of the paragraph. I have read and read again—I have asked several medical friends to read—this section of the paper, but suspect that it holds here as elsewhere; the English sentence, which is not intelligible on first reading, will not often give up its meaning through subsequent and repeated perusal.

Again, physiological and clinical or therapeutic conclusions, which are solely based upon chemical analogy, which are established alone upon the authority and experiments of the chemical expert, are always liable to contain a large element of error. How easy it

would be to fill pages with examples of such error in the near and remote past, but we mean to be brief, and so must forbear. With every apology to Mr. Meier,—and assuming his vocation to be that of the chemist and not of the clinician,—I will venture to assert that it is not the *human* stomach which he has in view, and to which he constantly alludes and appeals in his recent paper. He may not be conscious of such fact,—fact although it be,—but it is the *laboratory* stomach—the stomach which has its origin in, the functions of which are controlled by, the imagination of the professional chemist—which he has made the object of his recent study. This is the kind of stomach which he shows to be practically sure of holding four ounces of fluid, as a minimum, at all times and in all conditions, both of health and disease. Such was the stomach which dissolved the alkaloidal strychnine every time, although "*the addition of two minims of acid sulphuric, dilute*" (U. S. P.), seems to have been found convenient.

And, confronted with whatever argument, with purpose to support the claims of alkaloidal strychnine, we meet it with the challenge, *cui bono!* What good purpose can possibly be served by a substitution of alkaloid for salt? Alkaloidal quinine, *per contra*, has its claims and its especial uses; the dose of quinine being always integral and often massive, there may be marked contrast in favor of the alkaloid, as respects the quantity in the aggregate of active principles which the patient receives. Moreover, chemical considerations often indicate resort to alkaloidal quinine,—as in the making of certain composite pills. No such observations apply to the alkaloid of nux vomica. What possible *raison d'etre*, then, does it present? None, so far as the present writer can ascertain, except that when we urge the withdrawal of this insoluble body from pharmacy and the universal substitution of its congener, the at all times and readily soluble salt (sulphate), we join issue with prominent manufacturing pharmacists of the country, who have—somehow—chiefly chosen the alkaloid in the fabrication of their varied and innumerable pills and granules. (And mark, *passim*, a strange inconsistency: they give us the sulphate when it is proposed to prescribe a minute, homœopathic dose ($\frac{1}{200}$ to $\frac{1}{100}$ grain); if we would employ the drug in more effective dose (*e.g.*, $\frac{1}{30}$ or $\frac{1}{20}$ grain), we must seek another source of supply or accept the alkaloid of strychnine).

Now, advance in knowledge is constantly making trouble for doctors and druggists. How often has this been illustrated in the department of therapeutics during the past ten or fifteen years. But, as respects the manufacturing houses just alluded to, is it not at their own option, because at their advantage also, that they profess *to serve the practitioner of medicine?* It only requires that evidence be presented that these medical purveyors have made a false move, in any particular, for them, doubtless, to recede from such position and take another and advanced step.

And, indeed, were it admitted that Mr. Meier's experiments and arguments have much greater cogency than we can admit, our position is still held with insistence. The profession does not, even yet, *know for certainty* that this most potent, most insoluble remedy,—the alkaloid of strychnine,—can with safety be intrusted to the stomach,—*i.e.*, in the larger doses and by method of continuous exhibition. Whereas, as concerns the salt, *we do know*. It is soluble, invariably and freely so. Though the stomach, by hypothesis, contain but one drachm of neutral fluid, the $\frac{1}{20}$ grain sulphate of strychnine is, by assurance, provided for.

Again, as to the kindred and closely involved question of "*cumulative action*," Mr. Meier, with brief reference and show of slight effort, takes up my note in a previous paper upon this phenomenon; but, if I rightly read this part of his article, he does not squarely meet me in the issue I make. It is true his position seems to be intrenched by a quotation from one who stands prominent among the most authoritative teachers and writers on therapeutics,—Lauder Brunton. And yet it may well be doubted if upon any other moot question conceivable, an appeal taken to this higher court in our specialty could be so unfortunate. Reference to the action of digitalis is pertinent because of the close analogy which this drug presents, in important particulars, with the action of strychnine. And at just this point the authority and correctness, in conclusion, even of Brunton, must be called in question, this only by suggestion, and, so far as we must, to support our own position and as the subject has bearing upon our present topic. Digitalis, then, can never, *in medicinal doses*, "diminish the secretion of urine, by causing a contraction in the renal vessels." It would be consistent with data, which have been repeatedly published, on the authority of Brunton, for that eminent therapeutist to

hold such a view; but it is, none the less, heterodox. Such "contractile" action is a part of the toxic, and not of the medicinal, physiological influence of digitalis. It is impossible that it should obtain under the latter influence.*

And now, in conclusion, we are prepared for our word upon "*cumulative action.*"

It is not long ago that the cumulative action of digitalis was a veritable *bête noir* with the medical profession; if any demon or spectre has been exorcised, as our knowledge has increased, it is this. Perhaps Fothergill was first, *a priori*,—as a deduction of physiological investigation,—to declare that digitalis could never become cumulative so long as it was prescribed to meet the correct indications and prescribed in medicinal dosage. Balfour and many others, from a clinical stand-point, have since endorsed this statement. If the present writer knows anything to be true in medicine, out of his own experience and observation, he knows that this statement, and the physiological principle on which it rests, are true. It is only as the drug is given in such quantity, or with such frequency, as to produce a cardiac condition, suggestive—however remotely—of the tetanized heart, and a contracted state of arterioles and capillaries, that digitalis can show the phenomena of accumulation; but this is the operation of a poison and not of a medicine.

Now, if digitalis can be taken continuously, t. i. d., for three years together, wisely, safely, beneficially, as we know it can, how long can *soluble* strychnine (under given circumstances, exerting a like influence upon heart and kidneys, as it surely does) be taken by continuous method? We know, from repeated experiment, that in dose of $\frac{1}{60}$ grain, t. i. d., it can be so received for *three consecutive months;* and why not, then, for six consecutive months? or for however long a period, so far as we meet indications and do not exceed physiological impression?

The present writer has had a considerable experience, the last year or two, in this form of medication, and has never met with any mishap. Would Mr. Meier, or any other advocate of the *alkaloid*, venture, *in such use* of the drug, to substitute alkaloid for salt? I greatly doubt it.

And now, as we close, permit space for statement of *axiom* (as we must believe our assertion to be), and then for *corollary*.

It is an *axiom* that any medicine acting, as digitalis does, on heart and kidneys, or acting after such analogy, provided it be skilfully exhibited, *cannot accumulate in the system*, however long such exhibition be kept up. Continuous solubility on the part of the drug, from the "therapeutic moment" it enters the system to the "therapeutic moment" when it leaves the system (by process of elimination), is, of course, an essential condition of the principle which we assert. Alkaloidal strychnine does not meet this condition.

Corollary.—"The writer's personal experience" (I quote from Mr. Meier's paper), and to this I may add my own repeated professional experience, are concerned with an occasionally observed phenomenon of strychnine medication, which has been too often forced into evidence of a so-called "cumulative action" of this remedy. Few other powerful remedies are so apt to be disturbed by idiosyncrasy in their wonted and expected remedial action as is strychnine. But such disturbance appears relatively early in the use of the drug; it no more concerns accumulation than it calls in question the skill of the prescriber, who may know all about his remedy but has not yet learned his patient's constitution. One case occurs to me, and will suffice as illustration. An adult female patient, with nothing in history, temperament, or whatever to suggest to me the experience which ensued. $\frac{1}{30}$ of a grain, continued t. i. d. for two days, so exaggerated susceptibility to auditory impressions that the usual surroundings of a quiet home caused intolerable discomfort to the sense of hearing, unless the ears were packed with cotton. On the other hand, I sometimes wonder that a few patients did not dismiss their doctor, when he was so young in medical experience as not to appreciate the difference between salt and alkaloid; and when upon several weeks' experience with the larger doses of the latter, the torments of tetanic twitches in certain groups of muscles and of "electric shocks," suddenly set up, testified to accumulation of the powerful drug in the body.

* The confusion in his comprehension of its action, the incredulity of Lauder Brunton concerning the practical value of digitalis as a medicine, because of the necessary antagonism (*sic*) between the "contractile and staying" action, which the drug brings to bear on the capillaries, and its "forcing action" upon the heart (and we are not aware that the distinguished professor has ever confessed to having received further light on this perplexing matter), illustrates a partial knowledge and erroneous view upon his part.

It is impossible, we repeat, for *medicinal digitalis to contract* capillaries or *stay* their current of blood.

THE TREATMENT OF BOILS AND CARBUNCLES AND OTHER SUPPURATING DISEASES BY THE USE OF CALCIUM SULPHIDE.

By John Aulde, M.D., Philadelphia, Pa.*

WITHIN the past two years I have read with interest many suggestions covering the treatment of boils and carbuncles; and the improvements indicated by our increasing knowledge of antiseptic methods, it seems, would have been sufficient to point a more rational treatment than any which had preceded the study of bacteriology. The object of the present paper is more for the purpose of calling the attention of the general practitioner to a plan which has been followed with very satisfactory results during the last five or six years than with the intention of finding fault with the advice given in the editorial of the *Medical News* of this city (February 22, 1890) with reference to the use of iodine as advised by Beauquinque. Still, I am not willing to accept all the suggestions put forward in the article in question, although no fault can be found with the use of iodine, as an antiseptic of the highest value, under certain conditions and restrictions. While iodine is an efficient antiseptic, we must bear in mind that it is more or less irritant to the living tissues when applied in considerable strength. Whatever its action upon local septic affections, it would appear almost impossible that the use of the remedy should be available in overcoming the influence of microbes where those micro-organisms are situated at such a depth below the surface, as is the case with carbuncle, and it would require some stretch of the imagination to assume that these diseases—boils and carbuncles—"are caused by the entrance of specific microbes into the cutaneous glands."

If the theory was advanced that these specific microbes, or the poisons developed therefrom, were transmitted through the circulating fluid to the seat of inflammation, there would be less objection to that than is afforded by the unsupported statement quoted above. In the case of carbuncle, for example, where the origin of the disease is situated beneath fasciæ, which present an irresistible barrier to the passage of microbes, in my opinion, the assumption is unwarranted by the facts, the truth of which I shall attempt to demonstrate by an account of the successful treatment of cases in which this theory is wholly ignored. In this connection it should be noted that carbuncles, boils, abscesses, and felons may be, and often are, the result of injury to the healthy tissues. How few cases of spontaneous palmar abscess are seen by the surgeon? One of the first questions which the surgeon puts to the patient is, At what time, or how long previously, has the patient injured the palm of the hand by the use of a poker, the injudicious strain in manipulating a cane, or other incident, according to the particular business in which the patient may at that time have been engaged? Inquiries of this nature certainly give color to the theory advanced above,—viz., that the disease may be due to the presence of microbes, or the poisons developed therefrom, distributed through the medium of the circulation. Proof of this assumption is apparently complete from our knowledge of the effects of injuries and contusions which cause congestions but do not produce abrasions of the skin. The superficial tissues are discolored, the sensory nerves are obtunded at the most central portion of the injury, while the functions of those adjacent thereto are heightened, due to the swelling consequent upon the increased supply of blood to the parts.

Assuming that this represents the main features attending the development of boils and carbuncles, it seems fair to estimate that the condition depends upon causes coming from within, or developed incidentally, without the rather far-fetched theory that the ubiquitous microbe penetrates the cutaneous glands. If these micro-organisms possessed the power claimed for them, no one would for a moment be safe from their mephitic influence, and it would be but a question of time when human life would be cut off from the face of the earth. The investigations of Park, of Buffalo, N. Y., show, beyond the question of doubt, that pathogenic bacteria in closed cavities may be absorbed, and the treatment of numerous cases of boils and carbuncles by internal medication, with a view to render their activities less harmful to the system, prove that, if microbes are present in the incipiency, their rapid absorption or destruction may be favored by the judicious use of calcium sulphide, thus converting a most malignant affection into one which is comparatively benign in its effect upon the economy, and at the same time short-lived in its activity.

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The treatment I would recommend to the attention of the medical profession for boils and carbuncles is comparatively simple, and may be formulated as follows: When the disease is seen in the early stages, before suppuration and breaking down of tissues have occurred, the affected area should be carefully washed with an antiseptic solution, and, where the application can be made, a little dry cotton-wool should be used, with a suitable bandage to keep it in position, and the patient restricted as to diet and exercise, when calcium sulphide should be given in doses of $\frac{1}{10}$ grain every hour or two. In case the pain is severe, and there is considerable swelling, which occurs within one to three days after the first symptoms are noticed, and before any suppuration has taken place, an ointment of belladonna or carbolic acid should be applied in order to keep the integument soft, but no irritants nor poultices must be used for the purpose of hastening suppuration, for that of all things is the very complication to be avoided.

While admitting that counter-irritants do sometimes apparently show good results in aborting diseases of this kind, it is a fact that such treatment more frequently fails, and then it is that we have more difficulty in maintaining an antiseptic condition. Especially is this noticeable when surgical interference in the shape of an incision is demanded. Unfortunately, I think, for our practice, the abuse of poultices has the effect of precipitating the formation of pus, and, when seen in the early stages, the patient should be cautioned to avoid them. It does not follow, however, that they must not be used at a time when the physician finds there is a special demand for them, but rather that they should be abandoned as a routine practice. When pus has accumulated, and an incision has been made to relieve the tension and evacuate the cavity, there are occasionally times when a poultice for the period of twenty-four hours may favor resolution and hasten recovery, but they must be applied hot and frequently changed. The abuse, not the use, of poultices is that against which I contend, and most physicians, who will follow the plan here outlined, I am disposed to believe, will take kindly to the method.

It will be observed that I have given no special directions regarding the antiseptic measures to be adopted in making the incision, but that I do not deem necessary, as the usual local antiseptic precautions are to be carried out throughout the entire treatment. Whether the incision is made with the scalpel, or whether the pus is evacuated by means of the aspirator, is to my mind a matter which should be left to the attendant, but no modern surgeon would think of attempting to evacuate the abscess through the medium of a poultice applied day and night until the tissues had become broken down and rotted, as was the practice twenty-five years ago. The indiscriminate use of poultices not only increases the amount of suppuration, but it also tends to favor the development of sepsis, and consequently the less we have to do with them the better it will be for the patient and for the reputation of the profession.

The idea of aborting boils and carbuncles by means of medicinal treatment is a very seductive one, but doubtless the suggestion will be pooh-poohed by surgeons, although they take pleasure in asserting that counter-irritants may occasionally accomplish the object. Although it may appear somewhat extravagant, I make the statement that boils and carbuncles, in their early stages, can often be aborted by adopting the suggestions regarding treatment already announced; when they have so far progressed that suppuration is inevitable, the malignant character of the disease can be overcome and suppuration kept well in hand by the judicious use of calcium sulphide. This remedy should, therefore, be promptly administered and regularly continued, but not to the exclusion of stimulants, as indicated by the condition of the system, together with the adoption of the necessary antiseptic precautions. I am in a position which enables me to confirm all that has been said of the therapeutical value of calcium sulphide by Dr. Mortimer Wilson, of Port Huron, Mich. (THERAPEUTIC GAZETTE, p. 306, 1888), in the treatment of boils, abscesses, pustular acne, and leucorrhœa, and desire to add to the list a number of other diseases which are not infrequently rebellious to the ordinary methods of treatment.

The treatment of felon (paronychia, cacoparonychia) has always been regarded an exceedingly troublesome subject in the hands of the general practitioner, and in the larger centres, specialists, giving their entire time and attention to this matter, have sprung up. Although there may be some doubt about these specialists, so called, having mastered the pathology and treatment of the disease more thoroughly than others, it shows that there is a feeling among the laity that any

one giving his particular attention to this special branch should be better qualified, and it shows further that the number of cases is larger than at first we would expect. Almost every one who has suffered from felon will be able to show the effects of treatment in the shape of a crippled finger or thumb, and not a few of them can tell exactly the number of pounds of flaxseed they used in preparing poultices, the number of weeks they were unable to work, as well as the exact number of nights they were compelled to walk the floor on account of the excruciating pain. Both science and society alike demand that improvements should be made in the methods of treatment, and while I cannot object to surgical interference at the proper time, I most strenuously object to all palliative remedies which have for their object the breaking down of tissues with a view to favor suppuration. Turpentine, carbolic acid, iodine, nitrate of silver, and other caustics and escharotics must be abandoned when it is shown that their use does more harm than good.

The plan of treatment briefly stated will run about as follows: The patient having been advised to place himself in the most favorable condition with a view to modify the circulation, the use of vascular sedatives will be indicated, as aconite, gelsemium, or veratrum, but preferably gelsemium. The excruciating pain due to the inflammatory action is best controlled by the local use of water and clay, prepared in the form of a semi-solid, and kept constantly on the affected finger in such a manner that it will answer as a temporary support. Turpentine, nitrate of silver, and common lye, while acting as counter-irritants, accomplish but little more than this, because they form a crust which reduces the superficial pain, and this at the same time acts as a support to the underlying tissues. But the inflammatory action progresses without let or hinderance, while the moist clay answers as a protective and serves to reduce the local heat, two very important points. The continuous exhibition of calcium sulphide, as heretofore indicated, will shortly reduce the activity of the inflammation, and when seen early, few cases will go on to suppuration, while the demand for anodynes and poultices is wholly eliminated from our treatment. Loss of sleep is rare, and within a week, sometimes less, the patient is able to use his hand as well as before the accident.

The diseases met with by the general practitioner in which calcium sulphide may be used with benefit are so numerous that it would be impossible to point out, as I have done in the previous instances, the special details of the treatment; but a few of them will be mentioned, together with some suggestions which will put the student in the proper channel for investigation. In doing so I wish it to be understood that I do not claim priority in the use of the drug, although during the past few years several papers from my pen have appeared upon the subject. Possibly I may be entitled to some credit for extending the usefulness of the drug, by finding some new applications for it, and for calling attention to these and to the more general uses as originally recommended by Dr. Sidney Ringer, of London.

In the treatment of ovarian and uterine affections, calcium sulphide often serves a useful purpose by preventing the formation of pus; or when appropriate local treatment is instituted, the disappearance of long-continued pain may be sufficient to warrant us in concluding that the formation of pus has been averted. Not infrequently displacements of the uterus are attended with ovarian pain, which, if not given attention, result in salpingitis and a long train of ills, that are only relieved after years of suffering by resort to the knife. I have been fortunate in quite a number of instances in overcoming this chronic ailment by suitable local treatment and the exhibition of calcium sulphide in doses of $\frac{1}{10}$ of a grain at intervals, so that five tablet triturates each containing this amount are taken daily. Those who have doubts about these statements can easily settle the matter to their own satisfaction in the course of a few days by selecting from among their patients some poor bed-ridden woman who has been half invalid for several months, or possibly years. Arguments of this character are the most convincing, but the treatment must be instituted under the restrictions mentioned,—viz., the uterus, if displaced in any way, downward, backward, or forward, should be kept in proper position, preferably by the use of a wool tampon made of real wool. Chronic uterine catarrh may be successfully treated in the same manner, but in using the wool tampon it is advisable to introduce along with it a paste made of iodoform, with lanolin and Canada balsam as a base.

Bronchial catarrh, acute, subacute, or chronic, is always benefited by the use of calcium sulphide. In the acute stage, when the cough is severe, the dose mentioned

should be given every hour, and along with it may be given from $\frac{1}{50}$ to $\frac{1}{100}$ of a grain of morphine sulphate. By a rough estimate, I should judge that two-thirds of all the coughs and colds might be treated thus, and with much better results than by the administration of nauseating mixtures, such as are concocted by the old-fashioned practitioners. Subacute and chronic cases will not require any anodyne, but may demand something in the nature of a vascular stimulant and tonic.

Croup is quickly amenable to this method of treatment (calcium sulphide), and when begun early and used faithfully, there will be less likelihood of intubation being demanded.

In the case of toothache and earache, and, in fact, in all cases where suppuration is threatened, calcium sulphide produces results which, to say the least, are remarkable. Take such wounds, for example, as that produced by stepping on a rusty nail, poisoning from a fish's fin, the symptoms of tetanus produced by sticking the end of a scissors into the wrist, and one may have some idea of the manifold uses to which calcium sulphide may be put. Cases of the kind mentioned, which presented most formidable appearances, threatening to develop into tetanus without a moment's warning, and other cases of like character, I have seen subdued, and all the active symptoms and pain disappear within twenty-four hours after instituting treatment. Of course, proper attention was given to cleanliness, but I cannot bring myself to believe that such details as suggested in this matter would have been sufficient to control suspicious indications in so short a time.

My paper has already exceeded the length originally intended, and I shall close the subject until some who read this want more detailed information upon the various topics here noted.

1910 Arch Street.

AN APPARATUS FOR THE COLLECTION OF DUST AND FUNGI FOR MICROSCOPICAL AND BIOLOGICAL TESTS.

By Samuel G. Dixon, M.D., Philadelphia, Pa.*

THE instrument about to be described is adapted to the drawing of the air containing micro-organisms or microscopical *débris* from the floors or walls, and depositing it on cover-glasses for microscopical examination or on plates containing culture mediums.

A trial experiment was made with it in a street railway-car in Philadelphia. The dust from the floor of the car was drawn on to cover-glasses smeared with a sticky solution of gum arabic. On examination under the microscope tubercle bacilli were found in the dust drawn from the floor of the street-car.

Reference to the illustrations show a cylinder, "*A*," about six inches in length on a base, "*B*," two and one-half inches in diameter. On either side of the cylinder, "*A*," running lengthwise, are chambers, "*C*" and "*D*," four-fifths of an inch wide and one-quarter of an inch in depth. These chambers communicate with the interior of the cylinder "*A*" by means of round holes, "*e, e, e, e,*" opening directly opposite each other. Chamber "*C*" opens into the base "*B*" and chamber "*D*" into the tube "*F*," which latter is attached to the tube "*G*" by a connecting rubber tube and exhaust-bulb. "*I*" is another cylinder which fits closely into "*A*." It has two rows of holes corresponding to those ("*e, e, e*") in "*A*," but at an angle to the perpendicular, so that only one pair open into the chambers "*C*" and "*D*" at a time. "*K*," of which "*L*" is a top view, is a rack to carry cover-glasses or thin glass plates: it slips into "*I*," each shelf of the rack coming just below a pair of the holes opening from the chambers "*C*" and "*D*." The notches "*M*" are to indicate which pair of holes in "*I*" are open to the holes "*e, e, e, e*" in "*A*." "*O*" is a cap which closes the top of the cylinder "*A*." The small holes in the top of "*O*" and "*I*" correspond and are for a pin, which enables the operator to turn "*I*" without exposing the glasses on "*K*" by simply raising and turning "*O*." The projection "*N*" on "*I*" fits into the notches "*M*," so that one pair of the holes in "*I*" is always opposite a corresponding pair in "*A*." The projection "*P*" on "*K*" fits into the notch "*R*" in "*I*," and keeps "*K*" from turning, so that the strips supporting the shelves of "*K*" will not block up the holes in "*I*" and "*A*." "*T*" represents apparatus ready for use.

To operate the apparatus, the rack is loaded with cover-glasses coated with glycerin or some other sticky substance that will stand sterilizing, placed in "*I*," and "*I*" in "*A*," with the top holes in both cylinders opposite each to each. The cap "*O*" is then placed on "*A*," and the pin slipped through the small holes in "*O*" and the top of "*I*," so

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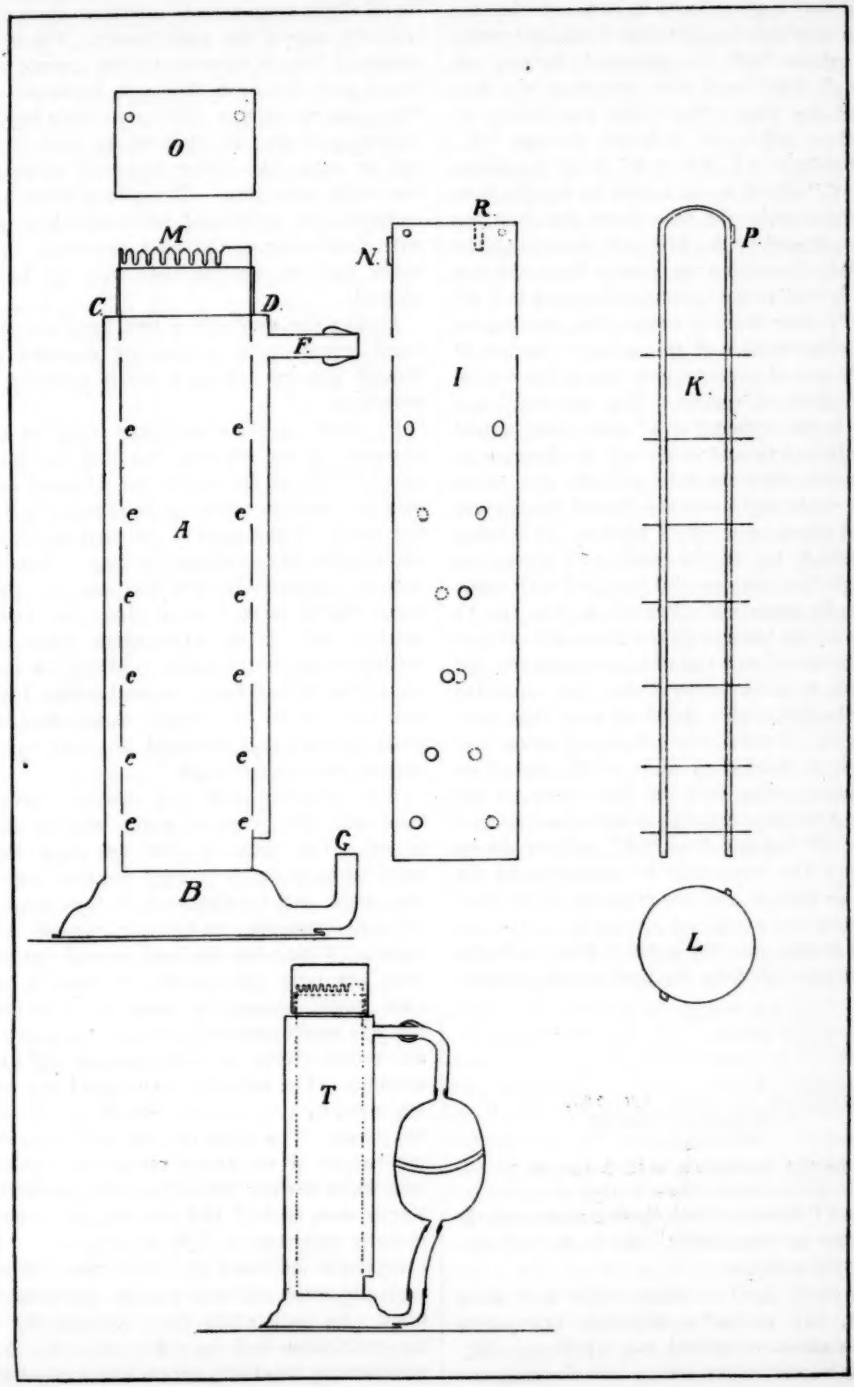
O
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that the apparatus may not be opened by accident. To draw air over the plates, the cylinder "*A*" is placed with its base covering the space on which the dust to be examined rests: the exhaust-bulb is squeezed, forcing air through "*G*," and thus agitating the dust under the base. The bulb now being allowed to inflate, air is drawn through "*F*," the top-holes "*e, e*" in "*A*," from the chamber "*C*," which in turn gets its supply from the space under the base where the dust has been agitated by the first puff from the bulb. As this dust-laden air passes from the top hole in "*C*" to the corresponding one in "*D*" it rolls over the top cover-glass, leaving on the sticky surface of this a large portion of the dust, and especially of the micro-organisms which it carries. The top "*O*," and with it the cylinder "*I*," now being raised slightly and turned to the left the distance of one notch, the next series of holes and cover-glass are brought into the line of the current and the first ones cut off from it. This being continued, the whole number of plates are brought into service and charged with material to be examined, after which they can be taken to the laboratory for treatment without any danger of contamination or exposure. Of course, it is understood that the apparatus must be thoroughly sterilized each time after being loaded with cover-glasses and before use.

If it is desired to examine the air of an apartment rather than the dust lying on the floor or wall, the exhaust-bulb is disconnected from "*G*" but not from "*F*," and air drawn through the apparatus by compressing the bulb as before. If the capacity of the bulb be previously measured, of course the amount of air drawn over the plates is determined by the number of times the bulb is compressed.

2015 CHESTNUT STREET.

RUPTURE OF THE CHOROID IN A HÆMATOPHILIA.

BY J. A. PATTERSON, M.D., SALEM, N. J.

I HAVE to report the following case, remarkable in its history, which is, unfortunately, incomplete.

Jennie S., aged 22, whose father is of white blood, her mother a mulatto, occupation child's-nurse, consulted me April 21, 1887. A few hours before seeing me, the baby she was attending suddenly ran his finger into her *right* eye, striking the temporal side of the eyeball; there immediately ensued lachrymation, photophobia, and great pain at the point of the stroke, and, upon palpation, I found slight conjunctival injection upon the temporal side of the eyeball only. No dislocation of lens or abrasion of the cornea was found upon the most thorough examination. The optic nerve was distinctly visible by the ophthalmoscope; no hemorrhage into vitreous or upon the retina detected, although the media were clear. The photophobia and lachrymation interfered materially with minute observation of the deep structures. She could read .05 Snellen with this eye for a moment.

During the succeeding two days she suffered intense pain, preventing slumber, although she was taking a small quantity of morphine.

On April 24, the fourth day from the occurrence of the mishap, she had the most painful night of the three, but dropped into slumber towards morning, awakening to find the vision in the injured eye had suddenly declined to light perception only. Tension normal; photophobia had disappeared; pain much better, located as at first, just under temporal side of the supraorbital ridge, immediately above the outer canthus. A feeling of the eyeball being pressed outward was also complained of. Optic media clear, no gross hemorrhages detected, although examination was not thorough.

The following day she reported having slept well the previous night without narcotics. The pain in the eye had subsided; a boring pain in right occipital region was noted, and continuation of the pressing outward symptom; no bulging, however, was visible. Vision has declined, so that she not even has light perception. I thought the case might simply be one of hysterica, but was confronted with my tests for diplopia and vision, giving no intimation of sight remaining. The vision of the sound eye was improved by a cylindrical lens $+.75_D$ ax 90°. No ptosis. The right eye cannot follow the movements of my finger, remaining motionless, while left eye converges, etc., promptly. Pupils were normal, and were equally prompt in their response to light stimulation. "In exceptional instances the pupil may still act perfectly, even although the eye is absolutely blind. In such cases the conductibility of the optic nerve and the reflex action which it produces on the ciliary nerves are unimpaired, but the image is not perceived by the brain" (Wells's "Diseases of the Eye," p. 215).

At this visit, photophobia, lachrymation, and

pain having subsided, I was enabled to make a thorough examination of the fundusoculi, revealing a nerve slightly vertical oval, slight papillitis, some striation below, scleral ring out, outwardly bound by small choroidal ring; no detachments of retina or hemorrhagic spots; there was, however, a choroidal rupture, which was undoubtedly recent, but contained no hemorrhagic effusions; fovea was not involved. My notes say that the vessels are slightly altered in calibre, but fail to specify. Tension was normal.

The history of the case as a "bleeder" is interesting. She showed me a small papule, scarcely elevated, upon the right malar bone. This blotch is subject at times to very severe neuralgic pains, accompanied by free bleeding. The quantity of blood lost has frequently been sufficient to produce entire blindness in both eyes simultaneously for one-half to one hour in duration. A week before I saw her she had a tooth extracted in a neighboring town, followed by alarming hemorrhage, which was with difficulty stanched by the combined aid of both surgeons and dentist; always has suffered menorrhagia, at times metrorrhagia. She is subject to epileptic seizures, as is her mother. These spasms, however, appear to have no relation whatever to the attacks of hemorrhage.

For over two years I have attempted to learn the outcome of the case without success, the patient being in this city on a visit at the time of the accident, her home being near New York. I had her under observation a little over a week only, and am thus compelled to make a diagnosis of hemorrhage back of the optic globe, causing pressure upon the nerve-track, which might be found incorrect upon later observations of the case. This, with the visible rupture of the choroid, is sufficient to account for the total loss of even light perception.

69 Market Street.

CONTRIBUTION TO THE THERAPEUTICS OF HAY-FEVER.

By Alex. Rixa, M.D., New York.

I HAD the opportunity to pay particular attention to a well-defined case of hay-fever with reflex asthma, the patient, a near relative of mine, living in my house.

He acquired the disease in 1879, in Chicago, during the encampment of the Knights of Pythias on the camp-grounds, while lying in the damp grass. This happened about the 15th of August. Since then he is punctual in getting it every year between the 15th and 17th of August. Four years ago the case came first under my observation. I then advised my patient to go to the White Mountains, where he would enjoy immunity. However, being tired of the uniformity of his yearly pilgrimage, he decided this year to stay at home and see how far I could benefit him.

I do not intend to enter into a detailed description of symptoms, etiology, or pathology of the disease, but shall confine myself to give a short history of the case, with its experimental medication.

B. L. H., a commercial traveller by occupation; 40 years of age; weighs two hundred and fifteen pounds; complexion dark.

On the 15th of August I examined his nostrils, and found but very little hyperæmia of the mucous membrane. On the 16th, however, in the morning early, the characteristic sneezing commenced. Being a powerful man, this sneezing resounded through the whole building, arousing all the sleepers.

On examination, I found the mucous membrane of the middle and inferior turbinated bones suffused and very sensitive. The margin of the eyelids and inner canthus irritated and itching. Pulse and temperature little above normal.

My treatment at this period consisted of antipyrin in 15-grain doses three times a day, or oftener, a solution of boric acid spray to the nose, and a wash of solution of plumbi acetas for the eyes.

Notwithstanding this treatment the irritation and hypertrophy of the mucous membrane in the nose increased rapidly, which compelled me to resort to a five per cent. solution of cocaine spray.

Towards evening the patient became feverish. A clammy sweat covered his body. The temperature rose to 100° F., with a serrated pulse, while the membranes of the nose became almost unmanageable. Douching with a ten per cent. solution of boric acid and frequent spraying with cocaine controlled the matter for a while.

By this time the patient had lost his appetite, with the senses of taste and smell, and could take only some bouillon, wine with Seltzer, and whiskey punches.

On the fifth day a careful examination of the nares revealed the following state in these organs: The middle and inferior turbinated bone was covered with hypertrophied mucous membrane, which completely occluded the

nasal cavities, giving rise to a painful feeling in the eyes, cheeks, frontal region, and even to the back of the head.

The following suppository gave me decided satisfaction at this stage of the disease:

℞ Cocaine hydrochl., gr. ½;
Morphine sulph., gr. ½;
Atropine sulph., gr. $\frac{1}{10}$;
Cacao butter, q.s., ad nasal suppos. No. 1.

It promptly stopped the discharge and pain for about four to five hours, and acted also very favorably constitutionally by drying the clammy perspiration and quieting the excited nervous system.

However, fearing the consequences in the continued use of so large a quantity of cocaine, I decided to resort to some more harmless but still more heroic measure in treating this obstinate membrane.

I exposed the parts with a nasal speculum to a Mackenzie light, and cauterized both sides with pure carbolic acid. I selected purposely this milder escharotic, not wanting to destroy the Schneiderian membrane, and with it a good part of the sense of smelling.

To my disappointment, however, this procedure was not a success, as in twenty-four hours the swelling of the membrane reoccurred almost to its former extent, with all the previous symptoms. One more trial I ventured to give it, with the same limited result.

From thence I commenced a series of experiments with the patient, who was a most excellent and submissive subject for these trials.

Antipyrin insufflated seemed to have an irritating effect. Bismuth and morphine acted quieting for a short time; so did eucalyptus; solution of menthol, twenty per cent., in olive oil, applied with cotton tampons, as well as in the shape of suppository, gave negative result. Antifebrin suppositories had a better effect, but the duration of relief was too short. I also tried quite a number of the old-time remedies, all with negative results.

Of course, between all these experiments I had to resort to either the cocaine spray or cocaine suppository, in order to give the patient the desired relief.

At this period I decided to try galvanocautery. I used J. C. Vetter's apparatus, eight cells only, for about twenty-five seconds, which shrunk the hypertrophied membrane to a great extent. I then cleansed the parts by irrigation with a fifty per cent. tepid solution of Marchaud's peroxide of hydrogen. This treatment filled the bill at last beyond my expectations, through the whole course of the disease. The above irrigation twice of thrice a day, with the administration of ozonized vapor inhalation occasionally, gave the patient comfort and relief.

Three other cases of a milder type I had the opportunity of treating in the same way, with the same gratifying result.

Worthy of notice is the observation I made in this case regarding the course which the disease ran. I noticed mainly three particular stages, each of two weeks' duration. The first two weeks constituted the actual hay-fever, with its prevailing nasal symptoms. The second stage consisted of the prevailing asthma symptoms, and the third stage showed the predominating catarrhal or bronchial manifestations. Of course, the line of demarkation, so to speak, was not as closely pronounced as in any of our self-limited zymotic diseases, but sufficiently so to form a characteristic point for investigators.

Considering the doctrine that reflex cough or asthma is mainly produced in this instance by the stimulation of a certain sensitive area in a portion of the nasal mucous membrane, I gave myself the hope, in treating this circumscribed area to the degree of allaying all the stimulation, that I should succeed in avoiding the reflex asthma. However, such was not the case, to my great disappointment, for the asthma appeared just the same in due time, with all its sufferings to the patient, notwithstanding that there was hardly any nasal irritation present.

In the stage of asthma my treatment consisted of the following: I gave a lobelin pill (⅓ grain) every one to three hours, according to the symptoms, in all from three to seven grains per diem. Iodide of potassium, in 15-grain doses, as often as indicated, especially towards evening on cloudy, rainy days.

The following prescription acted charmingly at a paroxysm:

℞ Fl. ex. quebracho, ʒi;
Fl. ex. grindelia robusta,
Fl. ex. yerba santa,
Fl. ex. myrtus chekan, aa ʒ½.

Sig.—Teaspoonful every fifteen minutes in hot water and brandy.

However, the peroxide inhalations gave also the most gratifying result. I used Marchaud's very ingenious hand atomizer and ozonizer, with peroxide and c. p. glycerin in equal parts. It produces the vapor mechanically, and I administered the same

about five to six times in twenty-four hours, each inhalation not exceeding ten minutes. Though this treatment acted like a charm all through the day on bright days, it failed to give the patient thorough rest at night on moist, damp nights. At such times Chapman's spinal ice-bag was of great service to the sufferer. I applied it about 10 P.M for the first time, after all other remedies failed, but had rather a peculiar experience with it. About twenty-five minutes after the application his pulse sank from 94 to 60 beats per minute. I left it yet for a while, but the depressing symptoms became alarming. His face was ghastly white; the radial pulse almost imperceptible. Respiration 12 to the minute, and a cold, clammy sweat covered his whole body, giving every indication of a dangerous collapse. Under a persistent use of stimulants and hot applications he slowly recovered.

A few days after this attack, upon solicitation of patient, I applied the bag once more, with no disagreeable effect. I followed it up every evening, which gave patient a thorough night's rest.

In the catarrhal period I employed the following medication: Terebene, terpine hydrate, ammonium carbonate, iodide of potassium, liquor potassii citratis, etc.

The cerium oxalate in tablet form, in 10-grain doses, two to three times a day, did some good service.

However, at the termination of the last stage, nothing but morphine, with hydrocyanic acid, would relieve the spells of cough.

Throughout the first and part of the second stage the appetite of the patient was very poor, in spite of the administration of pepsin and pancreatin preparations. As stimulants, I used Hungarian wine, whiskey, brandy, and champagne. Patient lost twenty pounds in weight during this siege of sickness.

1264 Lexington Avenue.

THE ANÆSTHETIC PROPERTIES OF THE FLUORIDES OF ETHYL AND METHYL.

At the meeting of the Academie de Médecine, March 4, 1890, M. Moissan (*La France Médicale*, March 7, 1890) reported the results he had arrived at in the experiments which he had made in the attempt to obtain a knowledge of the properties possessed by these two anæsthetics.

Experimenting with guinea-pigs of the same weight, placed in bell-jars, with the chloride of ethyl, he found that anæsthesia of the cornea was rapidly produced, while the fluoride of ethyl either produced no anæsthesia, or of so slight a character as to be uncertain; while if the latter agent was administered in larger amounts it developed symptoms of poisoning. The fluoride of methyl is very slightly soluble in water, and, as a consequence, is but little soluble in the blood. Like the chloride of methyl, the fluoride of methyl is an anæsthetic, but is free from the period of excitation which is possessed by the fluoride of ethyl. This anæsthetic, according to the author, is perfectly comparable in all its effects to the chloride of methyl.

PANBOTANO AS A SUBSTITUTE FOR QUININE.

Panbotano, of the family of Leguminose mimosæ, is a tree indigenous to Mexico. Although it contains neither alkaloid nor glucoside, an alcoholic extract has been employed by M. Valude (*Journal de Médecine de Paris*, March 9, 1890) in the treatment of malarial fevers. The preparation which the author employed was made by macerating 70 parts by weight of the crushed bark in 1000 parts of water which was boiled down to one-half the volume. Of this, 1 pint might be taken in twenty-four hours by the patient. Dr. Valude has published notes of fifteen cases in which this remedy had been admintered, of whom eight were affected with intermittent fever, and which are the only ones of interest in this connection. It is claimed that in eighty-eight cases a single dose, or in some cases two doses, were sufficient to prevent the febrile access. The remedy is stated to be tolerably well borne, although in some cases a certain amount of vomiting is stated to be produced. These unfavorable effects, however, were avoided when the medicine was given on an empty stomach.

These clinical results admit of no physiological explanation, and the absence of an alkaloid in the plant, and the small number of cases reported by the author, go far to detract from the reliability of the results which were claimed to follow its administration. For a long time numerous substances have been proposed as a substitute for quinine, but as yet no one substance has succeeded in filling the bill. As to whether panbotano will prove more successful than other substances remains yet to be seen, though we must confess that we possess considerable scepticism in the matter.

The Therapeutic Gazette

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Medical Publisher, Box 470,
DETROIT, MICH.

Philadelphia, 714 Filbert Street.

SUBSCRIPTION RATES FOR 1890.

(Journal increased to 72 pages each month.)

THERAPEUTIC GAZETTE (postage included).....$2.00
THERAPEUTIC GAZETTE with MEDICAL AGE..... 2.50
THERAPEUTIC GAZETTE with AMERICAN LANCET 3 25
THERAPEUTIC GAZETTE with AGE and LANCET... 4.00

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Price to Foreign Subscribers direct (postage included), $2.50 (10 shillings). English postage stamps received on remittances.

Editorial communications should be addressed 332 South Twenty-first Street, Philadelphia. Articles intended for the Original Department of the GAZETTE will be accepted only with the understanding that they are contributed to it exclusively.

Business communications should be addressed to the Publishers.

Leading Articles.

THE TREATMENT OF BILIARY COLIC WITH OLIVE OIL.

THERE is something very inexplicable in the action of olive oil as a cholagogue, suggested originally by Dr. Kennedy, and recommended by him in the strongest terms for use in the treatment of gall-stones. His results have been confirmed by numerous writers and ridiculed by others, but it seems that the former list is the larger one, and it is still further extended by the report recently made before the Berlin Medical Society (*Therapeutische Monatshefte*, No. 2, 1890) of three cases of biliary colic occurring in women, which are reported as thoroughly cured by the use of olive oil in large doses, even after other methods of treatment had failed. Dr. Rosenberg states that his experiments on animals, in contradistinction to those of Bidder and Schmidt and Prevost and Binet, have convinced him that olive oil fulfils both indications in the treatment of gall-stone,—namely, of increasing secretion of bile and diminishing its consistency, thereby facilitating the removal of concrements from the gall-ducts. In the discussion which the reading of this paper evoked, Virchow stated that previous experiments which he had performed convinced him that the oil immediately after its absorption in the intestinal canal was first carried to the liver, and from there into the gall-ducts to be excreted with the bile, a part of it to be again absorbed by the epithelium. We can scarcely comprehend, however, how this can be possible; as far as we know, oil is only absorbed by the lymphatics of the small intestine, and then carried exclusively through the thoracic duct to the venous system. To reach the liver, the oil would have to pass through the pulmonary circulation, the heart and aorta, and be again carried by the hepatic artery to the liver. There is no doubt that this is the normal method of absorption of oil, although, it must be admitted, that certain authorities, among them Hofmeister, claim that the adenoid cells of the stomach and small intestine are largely instrumental in absorption. If that be so, they might likewise assist in the absorption of oil. This, however, is a hypothesis against which a great deal may be said, and in favor of which there is but little evidence; while at most it can only explain a part of the process, for but a limited amount of the oil is capable of emulsification through the influence of the pancreatic juice and bile, and the excess escapes unchanged in the dejecta. If, therefore, large doses of olive oil have any action, it can only be explained as attributable to the mechanical action of the oil while in contact with the intestinal mucous membrane.

If we had an unbroken series of cures of biliary colic resulting from the employment of olive oil, such observations as the above, although they are based on admitted physiological doctrine, would be of little value. They would only prove that there was some error in the argument; the facts could not be cast aside. Unfortunately, however, we do not have invariable success, and, in fact, perhaps, as large or greater a number of failures are on record than of cures; in fact, it has even been claimed by some (*Boston Medical and Surgical Journal*, September, 1881, p. 261) that the masses evacuated after the use of large amounts of olive oil are not gall-stones but merely partially saponified pellets of olive oil. So many different reports have, however, been published of cases of biliary colic in which cure is claimed to have been produced, that such an explanation may be disregarded. Of course, partially saponified oily masses may be met with in the dejecta after the administration of large amounts of oil, but that does not

prove that true gall-stones may not be by its agency removed in other instances.

But we everywhere meet with contradiction. Thus at the same meeting of the Berlin Medical Society at which Dr. Rosenberg read his paper referred to above Dr. Ewald stated that in his experience the use of olive oil in the treatment of biliary colic had always failed, and although perhaps in some cases relief might follow the administration of olive oil, it might be regarded as a clear case of *post hoc non propter hoc*.

THE THERAPEUTIC VALUE OF SULPHONAL.

IN previous issues of the GAZETTE we have alluded to the various warnings which have been given by several authors as to the danger attending the use of sulphonal in large doses; and it now appears that the remedy, even in doses of 7½ grains, repeated several times daily, is not free from danger, since Dr. Umpfenbach (*Therapeutische Monatshefte*, No. 2, 1890) refers to several cases where the continued use of small quantities of sulphonal produced disagreeable consequences. He agrees with the views of Erlenmeyer that a single dose of 30 grains of sulphonal should never be exceeded, although he states that his experience has not yet enabled him to confirm the statement that sulphonal may even produce dementia. He refers to the case of a woman without any heart lesion, who, after a dose of 30 grains of sulphonal, which, by the way, produced no hypnotic effect, suffered the entire following day from violent palpitation of the heart. Another case was that of a paranoic patient, 56 years of age, in whom 15 and then 30 grains were given without any unpleasant after-effects, but without producing sleep; while, when the dose was increased to 45 grains, sleep was produced, but on the following morning there was a slight chill, with coldness of the hands and face, trembling of the extremities, and a small, feeble pulse. Rest in bed arrested these symptoms, although they returned again on the second administration of a dose of 45 grains. The author likewise calls attention to two cases of paralysis in which the administration of sulphonal caused an immediate increase in the paralytic symptoms, which again improved after the remedy had been suspended. Dr. Umpfenbach, therefore, concludes that sulphonal is not comparable to chloral either in certainty or safety of action. The author likewise publishes notes of a few cases in which chloralamide was employed as a hypnotic, and, although he admits that his studies have not been carried sufficiently far to warrant a positive statement, he yet feels that his experience shows, as has been to a certain extent the experience of others, that this new hypnotic is likewise not entirely free from danger and not absolutely reliable.

Drs. Popoffet and Podanovsky have made an elaborate series of experiments on frogs and dogs, which largely assist in explaining the apparent inconsistencies which have been attributed by different authors to the action of sulphonal, while partly confirming the statements so frequently alluded to as to the unfavorable effects which may follow its clinical employment (*Les Nouveaux Remèdes*, April 8, 1890).

These authors have found that introduced beneath the skin of the frog, in doses of $\frac{1}{12}$ to $\frac{1}{3}$ grain, in one per cent. solution, sulphonal exercises a hypnotic action, whose intensity and length is proportional to the dose injected. They further observed a slowing of the respiration, occasionally preceded by transient acceleration, while later there occurs marked reduction in sensibility and difficulty in the performance of voluntary movements, and, finally, diminution in cardiac energy. When the dose is increased above half a grain all the phenomena become accentuated, and the animal dies in complete prostration as a consequence of paralysis of the heart. The weakening of reflex action is partly due to depression of the spinal cord and partly to action on the terminal sense organs, while interference with the voluntary movement is attributable to paralysis of the motor-nerve centres, the motor-nerve trunks and muscles remaining unaffected. Cardiac disturbance is due to the direct paralyzing action on the myocardium and the motor cardia ganglia. In warm-blooded animals sulphonal also has been found by these authors to influence a depressing influence on the nerve-centres, manifested at first by slight somnolence and uncertainty in walk when 3 to 5 grains for each two pounds of body-weight have been given by the mouth, followed by slight inco-ordination of movement, profound sleep, and prostration when doses of 9 to 12 grains have been given for each two pounds of body-weight; and by death when the quantity given amounts to 14 grains for each two pounds of body-weight. Sometimes sulphonal exercises a more or less prolonged excitation, the animal being in a state of

motor excitation, even although the movements are highly inco-ordinated. Among the phenomena constantly noted were great increase in the rapidity of the pulsations of the heart and of the respiratory movement, the former symptom being the first to appear in the majority of cases, and persisting up to the end; while the acceleration of the respiration appears later in the poisoning, and ordinarily disappears in the profound sleep which is produced. In toxic doses, sulphonal acts on the blood-corpuscles in the same manner as monoxide of carbon. The authors summarize their results as follows:

1. Sulphonal diminishes the excitability of the cerebral cortex and of the spinal cord.

2. In small and moderate doses, sulphonal increases blood-pressure through excitation of the vaso-motor centre and depression of the pneumogastric. In large doses it diminishes blood-pressure through paralysis of the muscular tissue and ganglionic centres of the heart.

3. The acceleration of the pulse is due in part to the stimulation of the accelerator nerves of the heart, but especially to the depression of the pneumogastrics.

4. Sulphonal, in small or moderate doses, does not modify the constitution of the blood, but in large doses it produces destruction of the red blood-corpuscles.

5. Sulphonal increases the reduction of oxyhæmoglobin in the blood, possibly by reducing the intimacy of union of oxygen and hæmoglobin.

Finally, Casarelli, as alluded to in the same number of *Les Nouveaux Remèdes* (April 8, 1890), claims that he has obtained satisfactory results in the treatment of diabetes mellitus with sulphonal. He maintains that sulphonal reduces the quantity of sugar and the quantity of urine, while at the same time relieving irritation, the effect being most marked when doses of 45 grains are given in twenty-four hours for several days in succession. In this dose, however, he likewise confirms the experience, now becoming almost universal, that sulphonal is frequently followed by extreme somnolence and vertigo.

THE ACTION OF OREXIN.

WHEN in the *Prager Medicinische Wochenschrift* for March 26, 1890, we saw a paper on the action of orexin, coming from the medical clinic of Professor Jaksch, we naturally expected that the history of the introduction of new remedies would repeat itself in this case: we looked for a warm recommendation of the new stomachic. Dr. Glückziegel's report of the employment of this substance in seventeen different cases cannot, however, be regarded as confirmative of the enthusiastic recommendation of Professor Penzoldt, alluded to in the preceding issue of the GAZETTE. Dr. Glückziegel seems completely to have failed in attaining any positive result from the use of orexin, either in improving the appetite and the general condition or the digestive capacity of the stomach. In some few cases there was apparently an improvement in the appetite, but the author shows that in these cases, one of which was that of acute rheumatism, cured by salicylate of sodium, that the improvement in the appetite might equally well be attributed to the cure of the affection by the sodium salt.

It is only just, however, to add that the doses given were smaller than those employed by Professor Penzoldt, and although the writer denies ever having noticed in healthy individuals the improvement of appetite claimed by Penzoldt, yet he thinks that in some cases of sickness it is possible that orexin may have some value in improving the appetite. We can, therefore, not regard his results as confirmative of Penzoldt's, but as emphasizing the necessity for further study with this substance.

Imredy (*Pharmaceutische Post*, April, 1890) has likewise failed to confirm Penzoldt's claims in regard to orexin. He has employed it in twelve different cases, and has found that in many instances it failed to produce any effect on the appetite, and in many led to the production of nausea and vomiting. Dr. Imredy employed the drug in the same form and in the same dose as was recommended by Penzoldt, so that we fear that in the estimation of Professor Penzoldt's results the wish was father to the thought.

MARK TWAIN ON THE THERAPEUTICS OF BY-GONE TIMES.

MARK TWAIN has been once more facetious at the expense of the doctors. The February number of *Harper's Monthly* contains an article by this humorist, entitled "A Majestic Literary Fos-

sil," in which he shows up the absurdities of old-time practice, when "the family doctor didn't allow blood to accumulate in the system," when "calomel was cheap," and everybody was salivated for even trifling ailments! His "literary fossil" is a "Dictionary of Medicine," compiled one hundred and fifty years ago by Dr. James, of London, assisted by Dr. Samuel Johnson, of literary fame. Copious extracts are made from this book, with which the readers of the *Monthly* are regaled. In those times, says Mark Twain, the physician went around with a hatful of lancets on his person, and took a hack at every patient whom he found still alive; even the healthy did not escape, but were bled periodically. For a common headache, the notorious Bonetus would let blood from the temples without stint, and it may be inferred that if he wanted to comfort a man that had the stomach-ache, he disembowelled him! The "licensed assassins" (*sic*) of those times introduced the most fiendish decoctions into their patients' stomachs. Specimens of these are given from the book under criticism. Some of these formulæ, like "Alexander's Golden Antidote," contained upward of fifty ingredients; the "*aqua limacum*" was a vile compound of garden snails, earth-worms, sheep dung, etc.! Mark Twain gives these prescriptions in full, in the quaint old-time style in which they were written.

It is not the object of the present article to present an abstract of this indictment of the medical profession of a former age, or to attempt to show that the indictment is *in no sense* deserved. In the era when Johnson's "Dictionary of Medicine" appeared (the compilers of which could not properly be called representative medical men) medicine was still encumbered with Middle-Age trash; the Baconian rule of exclusions and rejections had not yet weeded the materia medica of crudities. Amulets and charms were still worn by the common people, who appealed to saints as presiding over special diseases; it was believed by many that burnt deer's horns would cure fluxes, and that the lungs of a fox steeped in wine would cure asthma, etc. Men of the type of Sangrado and Bonetus still lived; in fact, they live now, though their charlatanry presents itself in a different shape. At the same time, there were practitioners of remarkable judgment and common sense, like Brown, Cullen, Benjamin Rush, who were an honor to the medical profession in the eighteenth century, and to whom we look back with pride to-day. It would be easy to show to what extent these men had felt their way out of the maze of baseless theories, and how far their practice, based on careful observation, was safe, sound, and rational. Take up, for instance, a work like Cullen's "First Lines of Practice," published a hundred and fifty years ago, and one will find very little there that bears any resemblance to the medical abominations (fit ingredients for a witch's caldron) which Mark Twain has gleaned from his "Literary Fossil." In fact, we challenge proof that Cullen or any of his enlightened *confrères* had faith in any such absurdities. The practitioner of that epoch was not always a fool or a "licensed assassin."

It is easy enough to present a sombre picture of any age by holding to view only the worst or most unprogressive aspects.

If there has been any progress in the treatment of disease during the past hundred and fifty years, it has been because of the prevalence of scientific methods; it has been because a more profound knowledge has been acquired of the human body and of its functions: it has been because of the development of chemistry and a better knowledge of drugs; it has been because of physiological experimentation and painstaking clinical study; it has been because the statistical method has been applied to therapeutics, and because the natural tendencies and self-limited nature of diseases have been recognized. The advance has been along a great many separate lines, and has been due not to the labors of any one man, but of hundreds and thousands of workers in all lands. It would have been impossible for medicine not to have shared in the progress of the age. We are surprised that Mark Twain should not have seen this fact, and when he gives all the credit of this progress (as he does) in the aforesaid article to homœopathy (?), and the influence which the homœopathist has had on his fellow-laborer, the "allopathist," he either intends a huge joke or he evinces the most stupendous ignorance.*

* "When you reflect that your own father had to take such medicines as the above [a vile mixture of snails, earth-worms, common salt, hartshorn shavings, etc.], and that you would be taking them to-day yourself but for the introduction of homœopathy, which forced the old-school doctor to stir around and learn something of a rational nature about his business, you may honestly feel grateful that homœopathy survived the attempts of the allopathists to destroy it, even though you may never employ any physician but an allopathist while you live."

A WORD ON THE TREATMENT OF CHRONIC DISEASES.

THIS is the season when many newly-graduated physicians will begin their life-work.

The recent graduate will find medical practice somewhat different from what he has probably expected. Acute diseases and typical cases of disease will be rarer than his studies would have led him to suppose, while the incurable and the valetudinarian, who have worn out the patience of the family physician, will be likely to give the newcomer a trial. He will be almost certain for a time to have his powers taxed to the uttermost in the endeavor to help the chronically diseased. The hemiplegic and the ataxic, the neurasthenic, the cirrhotic, and the cardiac are likely to be his first patients.

Of course, it is trying to the young physician, in a strange place, to be obliged to start a reputation on his success in the treatment of cases in the nature of things incurable. Some of the patients who consult him he may decline to treat, and this, under some circumstances, would be the best thing for him to do. The patient may be an epileptic, to whom every known remedy has been administered in vain; or an alcoholic dyspeptic,—a victim of gastritis,—who will not give up the "ardent" for the sake of getting well; or an old syphilitic, who has been the rounds of the surgeons, and gets no better; or a consumptive, unable from poverty to obtain the food or even the medicine ordered, much less to seek the benefits of climatotherapy. It is hardly to be expected that the young practitioner, without even the backing of flush charitable societies, will assume the responsibility of prescribing the medical treatment and furnishing the necessary hygienic conditions for such a patient.

The victims of chronic diseases are generally great sufferers, and the materia medica is not lacking in really serviceable remedies, though these are fewer than the junior practitioner supposes, while hygienic therapeutics has undergone a preponderant development of late years. In the new analgesics, hypnotics, cardiac and respiratory stimulants, etc., the practitioner of to-day has resources which put him to advantage over his predecessors. In relieving pain and discomfort, then, the physician of to day, though he may not be able to cure, may markedly benefit. He may not have the power to remove a peccant cause, which keeps a part or organ permanently under morbid excitement, but he may reduce to a minimum the perturbation of the organism. He may not be able to restore a morbidly altered stomach, but he may, by a judicious selection of predigested foods, keep the system nourished, though the gastric glands secrete little pepsin. How, as by magic, the cardiac patient will sometimes find his dyspnœa and dropsical effusions vanish under the proper use of digitalis and its adjuvants!

A large part of a physician's duties is to keep such patients comfortable and prolong their lives. Dyspeptic ailments are almost certain to be greatly lessened, if they do not for the time disappear, under a suitable alimentary regimen and antiseptic lavages; the sufferer from chronic diarrhœa may also obtain notable mitigation of his troubles in dieting and antiseptic remedies. The patient in Bright's disease may, by careful treatment directed to the three great emunctories,—the skin, kidneys, and bowels,—and by a fortifying regimen, have a fair measure of health for years, and the diabetic, by wise direction in hygiene, and especially in diet, may be almost made to forget that he is a sick man. Hysteria has been the opprobrium and the despair of the physician, and yet the *début* into successful practice of many a young physician has been marked by the temporary triumph over some inveterate case of this disease.

In all chronic diseases the physician will look especially after the state of the digestive organs,—above all things, says Hufeland, the stomach,—and the whole system of digestion should be sound and well formed. He should see to it that the bowels are in proper order, and that the kidneys are eliminating properly; should give directions as to the hygiene of the person and of the sleeping-room; should relieve pain and insomnia by medicaments the least harmful, and insist on rigid attention to diet and the proper exercise. He will thus lighten the tasks of the suffering organs, and give comfort and prolong life, if he cannot cure.

IS THERE ANY TRUTH IN THE ADAGE, "NATURAM MORBORUM OSTUNDUNT CURATIONIS?"

IT is not easy to discover the author of the old adage above given, which may be translated as follows: "The remedy which cures indicates the disease." If there were sure specifics for certain diseases, then, in a case where the disease was unknown, if by

chance the specific remedy were given and the patient got well, the nature of the disease might be inferred. This would be easier still if the particular remedy were known not to have a beneficial effect in other morbid conditions. Unfortunately, there can hardly be said to be any medicaments whose curative action is limited to one disease or to one class of diseases, so that, given the morbid complexus, and given restoration *ad integrum* after the use of the medicine, one would be justified, from this fact alone, in affirming a diagnosis.

Quinine comes as near to being a specific in malarious diseases as any drug in the materia medica. Granting, now, that a severe case of migraine yields to a 15-grain dose of quinine, are we warranted in asserting that the migraine was malarial in its origin? There is no such warrant, for other headaches, certainly not malarial, have been helped by quinine. If, however, it were found that the patient had been exposed to malaria, and the headaches were periodical, the beneficial effect of the quinine would certainly be one factor more towards a diagnosis.

The same reasoning has been applied by a recent writer—Tison, in an article read before the Soc. de Méd. Pratique, March 6, 1890—to mercury and iodide of potassium. He shows, in fact, that the mere circumstance of certain diseases of an obscure and somewhat suspicious nature having yielded to the so-called specific treatment furnishes an insufficient element to establish a diagnosis.

At the same time, it is right to assign some diagnostic value to the fact that a disease (whether it be a cerebral tumor, a phagedenic ulceration, a cutaneous eruption) has got well under antisyphilitic treatment, especially if along with this circumstance any of the commemorative signs exist.

Reports on Therapeutic Progress.

THE PHYSIOLOGICAL ACTION OF ANTIPYRIN.

At the meeting of the Johns Hopkins Hospital Medical Society, held January 20, 1890, Mr. Aug. Hoch read abstracts from a paper prepared by himself and Mr. Simon, entitled "Some Additions to the Knowledge of the Physiological Action of Antipyrin on the Nervous System."

While a great deal had been written about antipyrin from a clinical point of view, it was not until the winter of 1888–89 that the physiological action of the drug was thoroughly studied, and especially is this true concerning its action upon the nervous system. At that time the present work was begun upon suggestion of Professor H. C. Wood, and carried on at the physiological department of the Johns Hopkins University, Professor H. N. Martin kindly offering facilities and revising the work done. Within the last year several articles have appeared, treating the same subject in a similar way, and some of the facts established by the authors can, therefore, only be considered as confirmatory.

In the experiments different animals were used, such as the cat, the dog, the rabbit, the fowl, and the frog, and the fatal dose naturally varied considerably, being about gr. xxx in the cat, gr. xx to xxv in the rabbit, gr. x in the fowl, and the enormous dose of ʒiv to ʒviii in the dog, full-grown animals being used.

The symptoms produced in the various animals were in all cases quite similar, and a brief account of them, in the cat, for example, will not be out of place, before taking up the consideration of the drug's action upon the various nerves of the body, in which, of course, the main part of the work consisted.

After the administration of gr. xl to a full-grown cat, marked salivation and lachrymation occurred almost immediately, lasting, as a rule, for about a quarter of an hour, and sometimes longer. The animal showed marked signs of distress by constant crying, and continuous attempts to seek some dark corner for the purpose of hiding. The gait soon became ataxic, beginning in the hind legs, and increasing until, finally, maintenance of the normal position became impossible, and the animal fell on one side.

Soon after this, a new stage—the convulsive stage—began, during which spontaneous convulsions, as well as artificially produced ones, occurred. It was easy to produce spasms of the entire animal by a light blow upon the table, a flash of light, clapping of the hands, etc., and if such stimuli were repeated sufficiently often, a general convulsion resulted, characterized by great rigidity of all the muscles of the body, and followed by clonic movements of the limbs with trismus. The pupils were widely dilated, and soon became insensible to light.

Respiration was greatly hurried, as was also the action of the heart, though this to a much less degree. The animal died, as a

rule, during a convulsion, or from paralysis of the respiratory muscles. The heart continued to beat for as long as twenty minutes after respiration had ceased, and was finally arrested in diastole. All these symptoms occurred within an hour after administration of the dose.

In order to explain these symptoms, experiments were made upon the various nerves in the animals enumerated above.

To begin with the motor nerves, it was found that the action of the drug upon these was a paralyzing one, while the muscles retained their normal irritability. This was demonstrated on frogs' muscle nerve preparations, by allowing the drug to reach the muscle or the nerve only, when it was found that whenever the muscle had been placed in antipyrin, stimulation of the muscle only produced a contraction, while stimulation of the nerve was never followed by any response; if, on the other hand, the antipyrin was allowed to act only on the motor nerve, then stimulation of nerve and muscle both was followed by a normal contraction.

This, therefore, points to an action of the drug upon the intramuscular portions of the motor nerves, and possibly their end plates.

Although these experiments no longer belong to the most accurate methods of investigation, still the fact that alternate exposure of the intra- and extra-muscular portion of the nerve, for the same period of time, was followed by different results, speaks for their validity in the present case.

Again, if in an animal, after death from antipyrin, the sciatic was stimulated, and the nerve separated from the surrounding parts, so that the current could not readily reach the muscle along the moist parts below, then stimulation of the nerve was followed by no contraction, while the muscle itself readily responded upon irritation. The same was demonstrated in the case of the phrenic nerves.

There is also a time, late in the course of intoxication, when no movements of any kind can be elicited from the animal, the heart still acting, and artificial respiration having been kept up throughout the whole experiment, which we explain by paralysis of the motor nerves.

Upon the sensory nerves antipyrin was found to act as an anodyne, both when locally and internally administered. Clinically this effect has been known for a long time, and experimentally the same was noted. Thus, if, for example, a circle of Müller was mapped out upon the arm, and antipyrin was locally applied, then such an area was remarkably increased in size, and especially in a longitudinal direction.

Similarly, if the cuticle upon the arm was removed, and a concentrated solution of the drug rubbed in, the point of a scalpel could be plunged into the sore spot, causing absolutely no pain.

Control experiments with a saturated solution of common salt certainly demonstrated a decrease in sensibility, but not nearly as marked as in the case of the antipyrin.

Moreover, it was found that at the beginning of the convulsive stage, the animal could be operated upon without the use of an anæsthetic.

We also have evidence that the other special senses are paralyzed, and, before all others, the muscular sense.

Assuming that the ataxic phenomena in tabes are primarily due to a decrease in the sensibility of the muscular sense, and remembering that the ataxia is one of the earliest symptoms in antipyrin-poisoning, in animals as well as man, several reported cases showing this, the authors infer that the muscular sense is the first to become abolished, as it is also the last to return; for if an animal, which has been given a dose, short of lethal, be left to itself, then the ataxia remains for several days after all other effects have already disappeared. The sense of sight is at first abnormally excited, flashes of light bringing on convulsions. This stage of hyperæsthesia, however, appears to be followed by a stage of total anæsthesia, the sense of touch and hearing being probably affected in the same way.

Upon the brain the drug acts as an excitant, the convulsions witnessed being due to a direct action on the brain, and probably on the motor cortex. That they are not spinal in origin can be shown by section of the cord, when they only occur in those parts which remain in connection with the higher centres.

They are not asphyxial, for if artificial respiration be started before the drug is administered, or after, they appear nevertheless.

Section of the brain, however, the cut passing through the crura cerebri, will prevent the appearance of convulsions of any kind.

With reference to the convulsions produced by the drug, it should also be stated that the cerebral excitement was considerably lessened after the administration of ether; that is, if the animal be kept under the influence

of ether for some time, then during the time after its withdrawal it was occasionally impossible to cause any convulsions during the remainder of the experiment, spasmodic contraction being the result.

As to the reflex action on the spinal cord, there was found first an increase, followed later on by a decrease. This was shown on the frog, and observed in the animals during the different experiments.

In some of the experiments on the action of the drug upon the brain, where the crura cerebri were cut, the temperature rose rapidly in a most extraordinary manner. Thus, in a dog in which the cut passed through the posterior portion of the crura, the temperature was found to be 110° Fahrenheit in the rectum, and 112° were recorded in the abdominal cavity some time after death. Usually, however, a temperature of 105° to 106° was noted under such circumstances.

This fact is of interest in many respects, especially in connection with a consideration of the well-known antipyretic action of the drug.

In the normal animal, antipyrin does not lower the bodily temperature, even if given in toxic doses, while this certainly does occur, to a marked extent, in the presence of fever. In the above cases high fever was observed, and antipyrin had been administered in quite a large dose; why then did it not affect the temperature?

Certainly a probable action of the drug upon the thermal centres directly offers itself as a ready answer to the question; the thermal centres being thrown out of action in the above cases, it could no longer exert its influence upon the tissues through the thermal nerves.

We certainly have reason to believe that heat-production or heat-regulation, or both, are under the control of a cerebral centre or centres.

In all cases of fever, in which the body temperature is lowered by the drug, the following is the probable action: The abnormal constituents of the blood, whether they be products formed by the action of bacteria, or otherwise, or reflex causes, having their origin in an abnormal condition of the nerves leading to the thermal centres, act upon the latter, stimulating them, if they are heat producing, paralyzing, or, at least, lessening their irritability if heat regulating, or both, if both exist. Antipyrin, on the other hand, if administered under such circumstances, and effecting a reduction in the temperature, must act exactly in an opposite manner, to result in a lowering of the temperature.

At the same time nitrogenous waste is decreased (as Samadowsky showed) by antipyrin in the normal, as well as in the feverish, animal; but that this decrease of waste is not due to an action of the drug upon the thermal centres, but upon the tissues themselves, is apparent from the fact that the temperature of the normal animal is not affected by it, however large the dose might be. This, then, explains the reason why antipyrin is such a powerful antipyretic, since it acts on both the thermal centres and the tissues.

As we saw in the description of antipyrin-poisoning, the number of respirations is increased, so that—*e.g.*, in one cat, poisoned with gr. xl of the drug—this amounted to 160 respirations per minute, and eight minutes later to 204; in another animal 250 respirations were recorded after the administration of a lethal dose. Later on this number decreased, not falling below the normal, however, until shortly before death.

In order to determine the cause of this extraordinary increase, we had to differentiate between an action of the drug upon the respiratory centre and an action upon the vagus, the discharger of respiration, as Markwald calls it. Section of the vagi did not prevent this increase, in fact, influenced it in no way, and a direct action upon the respiratory centre, therefore, suggested itself as the primary cause, for other possible secondary causes, such as an increase in temperature or an increased venosity of the blood, could readily be excluded by experiment. In the experiments also in which the crura cerebri were divided, a similar increase in frequency was observed. The decrease in the number of respirations following must be due to overstimulation of the centre, and the associated exhaustion, the vagi retaining their irritability up to the last, which could readily be shown by faradic stimulation, giving rise to the characteristic respiratory spasms. Towards the end, finally, respiration became quite spasmodic, and active expirations occurred. In this the increasing paralysis of the motor nerves must have co-operated with the exhausted condition of the respiratory centre. It may be of interest to state in this connection that in a reported case of antipyrin-poisoning in man, Cheyne-Stokes's breathing was observed, and in the case of some of our animals its homologue—viz., periodic respiration—was noted.

As to the effects of antipyrin upon the ci-

culatory apparatus, it was found that the blood-pressure is practically unaffected by the drug, a slight decrease in pressure only being noted towards the end.

The strength of the beats is somewhat lowered and their number increased, amounting to about twenty to forty per minute. A section of the vagi influenced this increase in the number of beats but very slightly, and the result thus seems to be due to an action upon the accelerator nerves.

In all the authors' experiments the heart was arrested in diastole, unless the upper brain-tracts were previously destroyed, when arrest in systole invariably occurred.

The styptic action of the drug is most marked, and has been ascribed by some to an action of the drug upon the vaso-motor system. While this may be the case, it is certainly only a partial cause, since the antipyrin influences the clotting power of the drug in a most remarkable manner; thus, in one case, when 50 c.c. of blood were allowed to flow into an aqueous solution of antipyrin (gr. x in 10 c.c.), a clot had formed one minute later already of such strength that the entire beaker could almost be inverted.

SODIUM SILICOFLUORIDE AS AN ANTISEPTIC.

For some years the hope has been entertained that in antiseptics would be found the means of combating infectious diseases, a view which has a certain amount of support in the observation of Dr. Cash, who found that when corrosive sublimate was given to guinea-pigs it would afford protection from anthrax, the animals under certain conditions living quite unaffected by the inoculation. The extremely poisonous nature of the antiseptic is, however, a great danger in itself, and naturally a less dangerous substance is a great desideratum. Such a substance is, perhaps, to be found in sodium silicofluoride, a compound which has already been brought before the readers of the GAZETTE by Dr. C. Berens (THERAPEUTIC GAZETTE, 1888, page 443). In the *British Medical Journal* for February 15, 1890, MR. F. JESSOPP BOKENHAM publishes an account of a number of experiments which he made with this agent.

His experiments serve to prove that in the solution of 1 to 750 sodium silicofluoride will entirely prevent alcoholic fermentation; that solutions of 1 to 900 and 1 to 1050 will delay fermentation for a time; but that these latter solutions cannot be considered truly antiseptic, as the growth of the yeast was only delayed. Similar experiments made with 1 to 3000 and 1 to 2000 with nutrient gelatin have shown that this proportion is without effect on the growth of the bacillus anthracis, and that there is no diminution in the virulence of bacilli cultivated through several generations on this pabulum.

As it has been claimed that sodium silicofluoride is usually harmless when given internally, Mr. Bokenham next made a series of prolonged experiments, administering the drug hypodermically to guinea-pigs.

The injection of about a drachm of a seventy-five per cent. solution into the peritoneal cavity of a guinea-pig rapidly produced signs of extreme collapse, the abdomen became rigid, legs extended, and the temperature rapidly fell from 38° C. to 26.5° C. The animal was killed, and marked signs of peritonitis were found, although no injury could be found attributable to the puncture of the syringe. ½ grain, in a warm saturated solution, was then injected into a second guinea-pig weighing ten ounces by an œsophageal tube. Great uneasiness was noticed after the injection. The abdomen became much distended, and death resulted in fifty-five minutes. On post-mortem examination, the stomach was found much dilated, with vessels injected, no signs of injury by the tube, full of pulpy food, with much thick mucus and gas. Intestines contained similar mucus. Heart arrested in diastole. Other organs were normal. In all the experiments, when the drug was given, it rapidly produced serious effects, although after the administration of ⅞ of a grain in one dose the respiration became slow and labored, and the temperature fell to 33° C., with symptoms of collapse, in which the animal died. These experiments certainly prove that the statements made as to the harmless nature of this drug are erroneous.

Mr. Bokenham then tested the effects of the drug on himself, after a mixed meal, taking ⅞ of a grain of the solid salt. No effect was noted for an hour, but about that time a feeling of great nausea with eructations came on. This lasted several hours. The pulse was also at the same time greatly slowed, tension being reduced. The following day the symptoms passed off. Similar effects were produced on three other individuals, medical students, after the administration of the same dose. Mr. Bokenham's results, therefore, certainly seem to show that this

salt is not a safe internal remedy, and physicians should hesitate before they advise its internal administration. His results, however, have proved the value of its results as an antiseptic.

CRYSTALLINE DIGITALIN.

Crystalline digitalin, according to M. ARNAUD (*Répertoire de Pharmacie*, January 10, 1890), bears the greatest analogy to tanghinine, which has been extracted from the tanghin of Madagascar. Both are free from nitrogen, both are insoluble in water, soluble in all preparations in chloroform, and very soluble in boiling alcohol. Neither is a glucoside, since neither of them yield glucose or any other sugar, whether reducing sugar or not from the action of dilute boiling acids. Both form resins under these conditions, even when not exposed to the air, without any appreciable formation of any soluble secondary product. Arnaud also claims that there is considerable similitude between these substances as regards their physiological action, and, further, they are both accompanied in the first substances which furnish them by true non-crystallizable glucosides, equally endowed with great activity on the organism, and both capable, in certain cases, of more or less completely replacing the crystallizable bodies. Although Arnaud proposes to still further prosecute his studies on these substances, he at present feels himself warranted in stating that tannin and crystalline digitalin are true anhydrides, capable of undergoing hydration under certain conditions, and thus resulting in the formation of acids. Schmiedeberg has thrown much light on the complex question of the proximate principles of digitalin, but Arnaud maintains that he is wrong in regarding crystalline digitalin, prepared according to the process of Nativelle, as a mixture of several bodies. This statement he maintains is only true in the case of insufficiently purified products, and if the crystals of digitalin be examined it will be found not to contain more than two to seven per cent. of foreign matter, and by successive solution and crystallization it may be obtained in a state of absolute purity. Arnaud thus claims that crystallized digitalin is a perfectly definite chemical compound. This statement he proves by treating a certain quantity of the crystallized digitalin with cold absolute alcohol in successive amounts until the substance is completely dissolved. After evaporating the liquids collected by six different washings, he states that all the residues have the same point of fusion,—243° to 245°,—while further the weight of the residues remains equal, thus proving that all the residue substances possess the same solubility. Successive washings with boiling benzine likewise give the same result, a fact which Arnaud especially calls attention to in view of the statement of Schmiedeberg that the crystalline digitalin is insoluble in this vehicle. Finally, Arnaud states in *résumé* that crystalline digitalin is a true chemical compound, and that it is wrong to designate it under the name of "digitoxin," as certain chemists have proposed.

TREATMENT OF ENDOMETRITIS BY CURETTING.

At a recent meeting of the Surgical Society of Paris, the subject of the treatment of endometritis by curetting was up for discussion.

M. BOUILLY read a paper, of which the following is a summary:

In eighty-one cases of endometritis he had performed the operation of curetting; sixty-nine of these cases had been watched and the results noted. Only simple endometritis had been treated, or cases complicated with slight inflammation of the uterine appendages; he had not regarded the method applicable to cases where the endometritis was complicated with laceration of the neck, with ectropion, or with uterine fibromata. The operation was not generally performed till after other kinds of treatment had been exhausted.

The symptoms presented by the patients treated were the following: 1, metrorrhagia, whether occurring during the menstrual period or independent of menstruation; 2, mucous or muco-purulent discharges more or less abundant; 3, various pains, some of which were attributable to a slight inflammation of the annexes. Pain alone has never, in his practice, constituted an indication for curetting.

The operation is always performed after anæsthesia by chloroform; it is then far easier, and the patient is spared much pain. The cervix is always previously dilated with laminaria tents made aseptic by iodoform. The first day a small tent is inserted; the next day a larger one, and the operation has always been easy on the third day. Bouilly much prefers slow to sudden, violent dilatation, and would not use the metallic dilators.

He always has recourse to antiseptic precautions; employs a Sims or Simon curette; performs the curetting with some force, so as to scrape away the entire uterine mucous membrane; the *débris* is removed by means of a swab. He terminates the operation by an injection of glycerite of creosote—1 part of creosote to 2 of glycerin—in mucous endometritis; in the hemorrhagic form he employs chloride of zinc, 1 to 10.

The consecutive treatment is of great importance. Bouilly thinks that failures are often due to septic infection, owing to want of sufficient care to keep the cavity of the womb aseptic.

The operation, as thus performed, has never been followed by complications. Four times only has he noted the first few days a slight tenderness on one or both sides of the uterus; oftener the pains rapidly disappear after the operation.

The results which he has obtained are as follows: Of the sixty-nine cases, thirty-nine got well; nineteen of these were hemorrhagic and twenty were mucous endometritis. There was one case of caseous endometritis, similar to caseous coryza, and giving rise to a very fetid discharge. In fifteen of the sixty-nine cases there was improvement, and in fifteen the treatment failed. The results were especially satisfactory in the hemorrhagic forms; still, in some cases, he has seen slight lesions of the annexes remain unaffected by curetting, while the condition of the endometrium was improved.

Of the fifteen unsuccessful cases, there were lesions of the annexes in three; persistence of hemorrhages was noted in four; persistence of muco-purulent discharges in nine patients.

The causes of failure seemed to him to be: 1, faulty operation (insufficient curetting); 2, rapid reinfection of the mucosa; 3, the existence of a form of glandular endometritis of the cervix, with viscous catarrhal secretion, very adherent and very abundant, the lesion being, in fact, at the bottom of the glandular culs-de-sac of the cervix, easily escapes the action of the curette; 4, generally want of success is due to lesions of the annexes,—in three of Bouilly's cases there was suppurative salpingitis, and in one cystic sclerosis of the ovary. In two cases, he thinks, there was submucous fibromata.

M. TERRILLON said that he had often, since 1885, performed "curettage" of the uterus, and he had been pleased with the results. Like M. Bouilly, he insists on the necessity of slow dilatation with laminaria tents. He employs for dressing iodoform gauze; with this the uterus is tamponed after the operation. He has found curetting especially beneficial in hemorrhagic endometritis. He has several times witnessed the rapid reinfection of which M. Bouilly had spoken. He believed that want of pains in disinfecting the syringe canula used for making the injections was often responsible for the septic accidents occurring.

He has in a dozen instances curetted in endometritis complicated with lesion of the uterine appendages. He has never witnessed any good result in such cases, particularly when the salpingitis manifested itself by hemorrhage. The appendages must first be removed; then curetting will cure the endometritis.

M. TERRIER spoke favorably of curetting for endometritis. He practised dilatation with sea-tangle tents for three or four days; then, finally, used large sponge tents for a couple of days. Hypertrophied and deviated uteri require great dilatation in order to be well curetted. The choice of curette is not of much importance; what is important is to make a very thorough scraping of the cervical cavity and the borders of the orifice. After curetting, he cauterizes the endometrium with zinc chloride, 1 to 10, and he often inserts a drainage-tube into the cavity of the womb to facilitate the flow of liquids. He is much in the habit of packing the uterine cavity after the operation with iodoform gauze, and leaving in the pledgets four or five days; then they are removed bit by bit, and antiseptic injections are practised; he recommends syringes with glass canulas instead of rubber; these must be kept perfectly aseptic. Like the surgeons who had preceded him, he had never had failures, except when there was lesion of the annexes.

THE TREATMENT OF CYSTITIS IN THE MALE.

In a paper read before the Louisville Surgical Society in March, 1890, DR. DAVID W. YANDELL discussed the treatment of cystitis in the male, calling attention to the fact emphasized by Keyes that the treatment of this condition is based upon the use of alkalies, anodynes, and the preservation of the proper attitude, or, in other words, rest in bed, with elevation of the pelvis, alkaline diluents, and anodynes to the point of relieving pain, and tenesmus (*American Practitioner and News*, March 29, 1890).

These agents may be assisted by general counter-irritation over the hypogastric region, with heat there and to the perineum, mild laxatives, demulcents, diuretics, certain infusions and decoctions, and full hot baths. In gonorrhœal cystitis Dr. Yandell especially relies on the use of nitrate of silver carried every few days, till relief is obtained, to the membranous urethra with a suitable syringe, 10 grains to 1 ounce being the strength of the preparation. In gonorrhœal cystitis the writer advises the suspension of all usual specific remedies in such cases, notably cubebs, oil of sandal-wood, and copaiba, though he recommends fluid extract of pichi in large and often-repeated doses, as reliable and usually efficacious.

Diet is of great importance. Salt meats, condiments, black coffee, cheese, and acidulated drinks, unless made effervescing with the carbonates, should be forbidden.

The rectum should be studiously kept empty. In bad cases, large enemata of warm water frequently thrown into the gut are an exceeding comfort. Opium is usually necessary, and in whatever form given it should preferably be lodged in the rectum.

In the subacute stage of the affection pichi is especially useful, and its efficacy is increased by the liberal use of the Silurian Waukesha water, especially when charged with carbonic acid gas. In extreme rebellious cases Dr. Yandell has seen improvement follow large and repeated doses of powdered Venice turpentine rubbed into pill with magnesia.

Chronic cystitis may occur in two forms. In one there is but a slight increase of the natural mucus of the bladder mixed with the urine. Here the inflamed mucous membrane becomes quickly intolerant of the pressure of water, and drives the bladder to expel it at frequent intervals. Here rest in bed, alkaloids, and anodynes, supplemented by pichi and Silurian water, in the majority of cases produce permanent cure. In chronic cystitis, the more severe form, consisting of what is generally called vesical catarrh, if the cause can be recognized and removed, cure will rapidly be accomplished, provided the disease has not continued for such a length of time as to produce permanent structural changes in the bladder-walls; in the latter case we are confined to palliative treatment, the operation for suprapubic fistula being here the most efficacious procedure. This Dr. Yandell believes is often too long delayed, and he maintains that it is better to do this early than late.

In vesical catarrh, due to causes which cannot be overcome, the first thing to do is to empty the bladder by a catheter once or more a day, with the gentlest possible hand. Where this can be thoroughly done, the most important advance towards relief has been made. It unfortunately happens, however, that the contents of every bladder cannot be completely removed with the catheter. For various causes a portion of the urine remains; this and the mucus undergo chemical change, decompose, become stale, acrid, irritating, and intensify by their presence the already existing evils.

In this condition of things it becomes necessary to supplement catheterism by washing out the bladder. How often should the patient be catheterized? The best answer is furnished by the bladder itself. Whenever this organ becomes sufficiently distended to produce pain, empty it. If the patient can do this unaided, so much the better; but be sure the evacuation is complete, for the urethra had better be subjected to the irritation of an instrument than the bladder subjected to the irritation of residual urine. Soft instruments are better than hard. Water containing a small quantity of salt or chlorate of potassium is a more agreeable injection to the patient than simple water. But equally agreeable and of positive curative value are injections containing boracic acid Whatever be the injection, its temperature when it reaches the bladder should be not less than 100° F. Allowance should be made for the water to cool as it passes through the instruments, and it had better, therefore, be started from the vessel at a temperature of 105° to 110°. The ordinary fountain syringe is as good an instrument as any for making injections. Few bladders will receive at first without pain more than an ounce or two of water. A sense of vesical uneasiness should be the guide as to the amount of water introduced. Positive pain should not be inflicted. The water, after remaining in the bladder for a few moments, should be allowed to run out. It will bring with it at first whatever substance is mixed with the urine,—always mucus,—sometimes pus and mucus. The injection should be repeated until the water runs away clear. After a time there will either be an improvement in the bladder itself, or it will have grown accustomed to injections, when larger quantities of water, and often of much higher temperature, may

be introduced. Injections of gradually increasing size are indispensable to the cure of these cases. Without being used in this way they cannot do their full work. The fluid must be made to reach every nook and corner of the pouches which are so often present in cases of long standing, and without the thorough cleansing of which no progress can be made towards cure, and not much even in the way of comfort.

Injections are medicated with many different substances. When the urine is alkaline and depositing phosphates, half a grain to a grain of acetate of lead to the ounce of water is strikingly valuable. A very soothing injection will be found in the biborate of sodium, 15 grains dissolved in half an ounce each of glycerin and water. A few drops of dilute nitric acid to the ounce of water may be used with benefit where the urine is heavily charged with the phosphates. Nitrate of silver in even so small quantities as a quarter of a grain to the ounce, which is often recommended, will at times cause great suffering.

As an all-round substance for injection, none compares to boric acid in every variety of cystitis in which injections are called for. It seems to fulfil every indication. It lessens the phosphates as well as lead or nitric acid. It changes the odor better than carbolic acid, and when given in full doses internally at the same time it has appeared to accomplish all that can be done towards changing, correcting, and sweetening the urine. To get these results, however, the system must be saturated with it, and the bladder fully distended with it in saturated solution. Short of this it will be found necessary to supplement it by some one of its companions named.

Among internal remedies the salicylates and the benzoates embrace perhaps the best. Tonics are useful in all, and essential in many, cases. Warmth, as obtained by climate, by clothing, and by other means, is scarcely second in importance. Many a man with chronic cystitis has been able to secure comfort by spending his winters in the South, and many cases have escaped exacerbations at home by avoiding all exposure to cold.

Catheterization done properly and sufficiently often, irrigation done properly and sufficiently often, with a saturated solution of boric acid introduced as hot as it can be borne, and gradually carried to the point of full distention of the bladder, constitutes the best local treatment for all the ordinary forms of vesical catarrh.

COMBINATION OF CHLORAL AND ANTIPYRIN.

Some time ago we alluded to the fact that it was impossible to produce a mixture of antipyrin and chloral hydrate in the form of powders, for when these two substances are brought in contact with each other an oily fluid results. The production of the fluid by mixing chloral with antipyrin is in itself not especially surprising, since numerous other substances, such as sodium salicylate, sodium acetate, etc., when combined with the crystals of chloral, likewise lead to the production of a fluid.

In the *Pharmaceutische Post*, February 23, 1890, Dr. Ludwig Reuter writes that, after mixing equal parts of antipyrin and chloral together, and placing the mixture away for some time, he found that numerous crystals had developed in what was at first a clear oily liquid. These crystals were but slightly soluble in cold alcohol, ether, or chloroform, but were somewhat more soluble in boiling alcohol or boiling water. They were perfectly odorless and perfectly tasteless. With caustic soda there was no separation of chloroform, and with ferric chloride only a slight yellow color was produced, by no means characteristic of the red antipyrin reaction which should have been obtained.

On heating the crystals with caustic soda there was at first traces of chloroform developed, and then isonitril with the separation of pure antipyrin, and the fluid when now acidulated gave an intense red color with ferric chloride. It would, therefore, seem that from this mixture of chloral and antipyrin a new compound has been developed.

This substance, however, appears to possess no marked therapeutic action, and when given to rabbits no effect either characteristic of chloral or antipyrin can be recognized. It is, therefore, worthy of mention that the administration of chloral and antipyrin together serve to antagonize each other. The name of the compound is trichloraldehydphenyldimethylpyrazolon.

THE TREATMENT OF GONORRHŒA BY SALOL.

In the *Lancet* for March 22, 1890, Mr. J. Ernest Lane writes that for some time past he has been prescribing salol in the outpatient department of the London Lock Hos-

pital, and has now tested its value in urethral discharges at all stages, in some cases relying solely on its use and in others employing an astringent injection in addition. An analysis of fifty cases in which he used this drug shows that six were cured, twenty-four showed considerable improvement, and fifteen no change whatever, while in five cases the symptoms were aggravated. The doses ranged from 5 to 30 grains daily, the beneficial effects when present manifesting themselves in a very short time. When improvement takes place the symptoms show abatement in from two to seven days; in acute cases the painful micturition is alleviated early; in cases of a more chronic nature, the discharge is materially lessened in this time. The author employed an injection in ten cases in conjunction with salol, the drug then being given in 5-grain doses. Subsequently Mr. Lane increased the dose to 10, 20, and, in some cases, 30 grains, and relied upon its internal administration without the assistance of injections. Out of forty cases so treated, an improvement was noticed in twenty within a week, while six were completely cured. Salol is not a mechanical mixture of carbolic and salicylic acids, but appears to be a compound of the nature of an ethereal salt, since phenol can, with some slight difficulty, be obtained from it on saponification. The potassium salt left after the treatment of salol with caustic potash gives with hydrochloric acid an acid which is either salicylic or one of its isomers. Four hours after administration by the mouth of 20 grains of salol, traces of carbolic and distinct evidences of salicylic acids, combined with other elements, were found in the urine. In one case the urine was blackened as in carboluria, the patient at that time taking 30 grains three times a day. The effect of salol is apparently produced by the action of the urine upon the inflamed urethra, since that fluid contains salicylates and sulphocarbolates. It may be given in doses of from 10 to 20 grains three times a day at any stage of the disease, and in chronic cases an astringent injection will materially hasten the cure. The effect does not appear to be enhanced by larger doses than 20 grains. When the amount was increased to 30 grains, the urine became blackened, and the symptoms did not show any proportionate improvement. The author commenced his experiments by giving 5-grain doses, and in all probability his tables would have been much more favorable had he administered the drug with a freer hand.

THE PRODUCTION OF ACUTE ŒDEMA OF THE GLOTTIS FROM THE ADMINISTRATION OF IODIDE OF POTASSIUM.

Although the use of iodide of potassium is known frequently to entail unpleasant consequences, yet the most dangerous of all, the production of œdema of the glottis, seems to have attracted little attention. In the *Therapeutische Monatshefte* for March, 1890, DR. A. GROENOUW has collected nine different cases, two of which occurred in his own practice, which illustrate the fact that in certain rare cases the internal use of potassium iodide may suddenly produce such intense œdema of the glottis as to render the instant performance of tracheotomy necessary, and in certain cases the œdema is so severe as to produce rapid death, although in some cases the œdema may disappear as rapidly as it occurred, and so lead to the disappearance of all symptoms of dyspnœa. Examination with the laryngoscope, or, in fatal cases, post-mortem examination, after operation, will show beyond doubt that the cause of dyspnœa is this œdema of the glottis. The cases further show that this accident does not require for its production that the drug have been already given for a long time, or that it should have been administered accidentally in large doses; on the contrary, the symptoms of suffocation have ordinarily occurred within the first day after the administration of this drug, perhaps after extremely small doses, and perhaps within an hour or two of the first dose.

The following table illustrates the time of occurrence and the quantity of the drug given before the œdema appeared:

ŒDEMA OF THE GLOTTIS OCCURRED.

Case.	On the day.	After use of.
6	1	3 grains.
2	1	7½ grains.
7	1	7½ grains.
8	1	15 grains.
4	2	30 grains.
9	2	30 grains.
5	2	56 grains.
1	6	195 grains.

Thus it is seen that this accident occurred after unusually small doses had been given and early after the administration of the drug. In the last case in the table, where the œdema occurred six days after the commencement of treatment, a case which occurred in the practice of Dr. Groenouw, on the second day of the use of the iodide of potassium pain in the larynx and throat was com-

plained of. Further, it would appear that where the action of the iodide of potassium is localized in the larynx other symptoms of iodism are usually absent. The author attributes this action to the iodine of the compound and not to the potassium, and maintains further that its occurrence by no means shows an impurity of the salt, for only one patient was attacked with œdema, and no bad effect was noted in a patient who had been treated for many months with precisely the same preparation.

It is not tenable to suppose that in these cases there was some special local lesion from which the larynx was predisposed to œdema. In no one of these cases was there a heart lesion or an affection of the kidney. Further, age and sex appear to be without influence, so that after all we cannot go further than attribute it to some special idiosyncrasy to iodine, and yet even in three patients the use of the salt was persisted in after the occurrence of the œdema, with no unfavorable after-effects, so that it, therefore, appears that the iodism is not a permanent one.

Of course the important point to be noticed in these cases is the fact, which should always be remembered, that even in the commencement of the administration of potassium iodide acute œdema of the glottis may suddenly occur, which, if unrelieved, will produce death within a few minutes; and that the longer the use of the potassium iodide is persisted in the less this danger, so that if a patient has taken 50 to 60 or 100 grains without unfavorable effects, the danger from œdema of the glottis has been minimized.

SALICYLATE OF SODIUM AS A CHOLAGOGUE.

According to the Vienna correspondent of the *British Medical Journal* for April 5, 1890, PROFESSOR STILLER, of Buda-Pesth, has used salicylate of sodium as a cholagogue for five years, and has found it better than any other drug in rapidity and certainty of effect. He gives the following illustrative case, which is one out of many: A man, aged 50, had suffered for about four months almost daily from severe bilious colic, and had been jaundiced for about three months. Rigors, with a temperature of 40° C., frequently occurred. He was so emaciated that his appearance suggested cancerous cachexia. The liver was enlarged and resistant, but smooth. The gall-bladder could not be felt. After a week's treatment with salicylate of sodium, the pains and fever disappeared, the icteric color decreased, vomiting ceased, and, after a four weeks' stay in the hospital, he was dismissed cured. The details of the mode of treatment are as follows: ½ gramme of the salicylate was given four times a day. It was given in half a glass of soda-water, or any other alkaline-water,—never in wafers, as these increased the gastric irritation. Usually .01 gramme of the extract of belladonna was added to each dose, as a non-constipating anodyne. Linseed poultices were applied over the liver. The patient was kept on moderate diet for several days, and alkaline-water, free from iron, was given as a beverage. Occasional pains were relieved by injections of morphine. Carlsbad and Vichy water was ordered by way of after-treatment. The cholagogue properties of the drug had also been proved by experiments on animals. In cases of pleurisy, Professor Stiller had noted a very striking diminution of the effusion when salicylate of sodium was given. Absorption occurred in a surprisingly rapid way, and Dr. Stiller recommended the drug, even for diagnostic purposes, as excluding the purulent character of the exudation. From 3 to 4 grammes in solution were administered daily, a spoonful being given every hour or two hours. The primary effect, no doubt, was on the kidney and the increased secretion of urine favored absorption. It was only recently that he had observed, in a case under his care, that the quantity of urine was increased from 650 to 2000 and even 2300 cubic centimetres under the influence of salicylate of sodium. The drug was also useful in sciatica.

IODINE AS A REMEDY FOR VOMITING.

M. DARTHIER (*L'Union Médicale*, December 10) bears testimony to the value of tincture of iodine administered internally for the relief of vomiting, a remedy recommended by the late Professor Lasègue in the vomiting of pregnancy. The author had observed its use in nineteen cases, eleven of which were tubercular subjects, and found that it is of more value in the vomiting of early phthisis than in that of the later stages of this disease. At the same time he gives instances of advanced cases with obstinate vomiting where the symptom was largely controlled by the drug. Among other cases he gives one of bronchial dilatation (subsequently fatal from

acute tuberculosis) in a female, who for three weeks had regularly vomited after every meal. From the date of commencement of the use of the drug she ceased to vomit, and after a week's treatment, which was not productive of any signs of iodism, was completely cured of the symptom. Apart from phthisical vomiting, M. Darthier finds it useful in alcoholic gastritis, in ulcer of the stomach, and in the vomiting of pregnancy and of chlorosis, instances of which are recorded. He says that the majority of the patients take the iodine with pleasure; it often produces an agreeable sense of warmth in the stomach, lasting from five to twenty minutes. The dose is ten drops, dissolved in one hundred and twenty-five grammes of water, taken in three portions immediately after meals. In a certain number of cases, symptoms of iodism are produced, chiefly coryza; but a good many patients do not experience any such inconvenience from it.—*Lancet*, January 18, 1890.

THE ACTION OF CAFFEINE.

At the meeting of the Academie de Médecine, held March 11, 1890, M. GERMAIN SÉE reported the results of a series of studies which he had recently completed with M. Lapicque, as to the action of caffeine on the motor and respiratory functions in a normal state and in a state of inanition (*La Tribune Médicale*, March 13, 1890).

We have for a long time been familiar with the accounts of various travellers as to the surprisingly stimulating properties of different vegetable products which primitive peoples employ to assist in the accomplishment of severe work in the absence of proper amounts of food. Such substances are instanced in coca, of mata, and guarano, employed in South America, the kola nut in Africa, and tea and coffee in Asia. We have naturally sought to profit by and utilize the valuable properties of these natural products, and tea and coffee are now universally used throughout the entire civilized world as mental stimulants, and more recently for the power which they are stated to possess of facilitating muscular work. It is, however, remarkable that in nearly all these substances, excepting of course coca, that chemical analysis has revealed the presence of caffeine. It would thus seem that the physiological properties of this alkaloid would give the explanation of these marvellous properties; but, although caffeine has been subjected to the most exhaustive study, the conclusions of different investigators as to its action are not concordant. According to some the special action of this alkaloid is directed to the muscles. According to others it acts exclusively on the nervous system. Naturally, that the properties of this drug may be utilized, a positive acquaintance with its properties and mode of action is absolutely essential. Only a short time ago Professor Heckel experimented with caffeine in enabling soldiers to sustain a long march without fatigue, and he found that it facilitated muscular work, reduced fatigue, and rendered a considerable decrease in the amount of food possible.

Professor Sée believes that caffeine owes this property to its power of increasing the activity of the motor nervous system, both of the medulla and cerebrum. As a consequence of this double action he would find the freedom from fatigue. Further, he claims that caffeine prevents loss of breath and palpitation as a consequence of severe muscular effort, and he states that, from experiments made on thirty healthy individuals, in nearly all cases running did not modify the respiratory rhythm provided caffeine had been administered, while the same individuals running the same distance at the same rate of speed suffered from loss of breath, and the number of respiratory movements was tripled. Caffeine would thus seem to place an individual untrained into the position of one who had been subjected to perfect physical training. Professor Sée concludes his paper with the following *résumé*:

1. Caffeine, in small repeated doses, when given to soldiers on the march, facilitates muscular work not by directly increasing the activity of the muscle itself, but by acting on the cerebro and cerebro-spinal system. The consequence of this double action is the diminution of the sensation of effort and the prevention of the feeling of fatigue.

2. Caffeine prevents shortness of breath and palpitation, as a consequence of severe effort.

3. Under its use individuals subjected to prolonged violent exertion acquire the characteristics of persons in perfect physical training.

4. In producing this excitation of the cerebro-spinal motor system, on which depends the increase of muscular tonicity, caffeine increases the loss of carbon by the organism, but it does not restrain the loss of nitro-

gen. It does not thus in reality save tissue waste.

5. A means of preventing tissue waste, and so preventing the effects of inanition from fasting, is absolutely impossible of realization, since such a state of affairs could only be attained by absolute inaction or immobility, a state of affairs which it is hardly necessary to state cannot exist. With caffeine, then, the direct opposite ensues,—that is, although there is intense work rendered possible, it is only obtained at the expense of the organism. The animal machine can only operate at the expense of tissue combustion, and it is precisely in facilitating this combustion that caffeine enables muscular work even during fasting.

6. Caffeine has thus not the property of replacing foods, but only replaces the tonic general excitation which the general ingestion of foods produces. If one could assume that it was the direct immediate instantaneous action of foods which stimulated the stomach and the nervous system, and that their alimentary value does not extend beyond this, they could be substituted by stimulants.

Finally, Professor Sée maintains that the action of caffeine on the heart and blood-vessels is different from what is generally maintained, and is a much more active stimulant than is usually believed.

THE USE OF FLUORESCEIN AS A MEANS OF DIAGNOSING LESIONS OF THE CORNEA.

In November of last year Dr. Straub, a Netherland army surgeon, discovered the fact that a solution of fluorescein, when dropped upon any portion of the cornea which was deprived of its epithelium, would color this spot a deep green and leave the rest of the cornea unchanged. In the *Johns Hopkins Hospital Bulletin* for April, 1890, Dr. Randolph states that he has now performed over one hundred experiments in this connection in the eye clinics of the Johns Hopkins Hospital and the Presbyterian Eye and Ear Charity Hospital, which have led him to form positive conclusions. Fluorescein is a red powder, soluble in water, and belongs to that class of substances which are found as products of coal-tar distillation. Dr. Randolph employed a solution of ten grains of powder to the ounce of water, to which is added fifteen grains of the bicarbonate of sodium. Dr. Randolph states that although he has employed it in the most intense forms of corneal inflammation, it has never produced any irritating effect. The portions of the cornea stained retain the color from half an hour to several hours, while the solution does not produce the slightest effect upon the healthy cornea. Whenever there was an actual loss of substance, the coloration was more apparent, and it may, therefore, be concluded that as long as it is possible to color any portion of the cornea, we may be certain that some lesion still exists. Even in cases of slight excoriation, scarcely visible to even oblique illumination, every detail of the wound and every minute point, where the epithelium had been removed, is clearly brought out by a drop of the fluorescein solution. In ulcers of the cornea, positive results were always obtained. In simple superficial keratitis the coloration was much less distinct than when this disease was associated with an ulcer. In parenchymatous keratitis the results were invariably negative. In three cases of iritis, uncomplicated with corneal trouble, Dr. Randolph failed to obtain any coloration. In two other cases of iritis of syphilitic origin where the cornea was involved, superficially as well as interstitially, marked coloration was observed. In glaucoma the result was negative.

The use of this substance is especially valuable in determining the presence of minute ulcers of the cornea in very young children, where the blepharospasm and photophobia are frequently so intense that the lids have to be forced apart in order to get a view of the eyeball, and then the latter is rolled about so continuously and the cornea flits so rapidly before our eyes, that we are obliged to simply infer from the attendant symptoms the nature of the trouble without actually seeing the lesion itself; a drop of the solution will locate the disease and its extent, and bring it out distinctly, so that it can be seen no matter how fast the eyeball moves about. In foreign bodies in the cornea, no matter how small the foreign substance may be, its position and size can be located to a nicety. The coloration is here distinct, showing itself by a green ring just around the foreign body.

MASSAGE OF THE HEART.

Since the position of the heart is such that mechanical influences can only be exerted on it from without with the greatest difficulty, it occurred to Professor Oertel that by increasing or diminishing the pressure which is caused in

a perfectly normal manner by the respiration on the heart, a mechanical action on the heart-muscle, and hence massage of the heart, might be produced (*Therapeutische Monatshefte*, No. 2, 1890).

From experiment, Oertel found that by jerking respiration,—that is, a respiration performed in two different ways, the second being the stronger,—the pressure exercised on the heart is increased, and when this is combined with climbing movements, and, at the same time, an increase in the depth of expiration, that dyspnœa is combated, and the pulsations of the heart may be stronger. These data were also experimentally confirmed by Heinricius and Kronecker, according to whom a direct contraction of air-pressure on the heart invariably influences its contractile power. The pressure of expiration, Oertel states, assisted by external mechanical pressure, the patient being directed to place his hands in the axillary line on a level with the fifth or sixth rib, and at the beginning of respiration to exert pressure in such a way that the hands press in an oblique line over the fifth or sixth rib at the point of greater curvature towards the xiphoid process. During this movement the pressure is steadily increased, until the maximum is reached at the end of expiration, by which time the hands have been pressed down over the fifth or sixth or eighth rib.

During inspiration both hands are taken away from sides of the chest. Oertel claims that through these processes massage of the heart was accomplished, that considerable influence is exerted upon respiration and circulation. The influence of the jerking expiration and pressure of the hands on expiration is evidenced in the greatly increased amount of air removed from the lungs in expiration. In addition to this increase in the amount of expired air, this method of expiration and external pressure increases the pressure on the heart's surface, and so produces a mechanical influence upon the heart. This statement is claimed to be a fact, and Oertel maintains that he has demonstrated its accuracy through a long series of sphygmographic curves produced on a young man in whom a part of the second, third, fourth, and fifth ribs had been resected. The results are stated to be as follows:

If the expiration is allowed to be exerted on every second or third systole at that time a great increase in the vigor of the heart's contraction made may be made out; during stronger pressure, the heart remains a long time in its maximum degree of systolic contraction, and, as a consequence, there is a larger pulse-wave in the artery produced. If, however, the pressure of expiration is allowed to act on the heart during several contractions of that organ, a continuous pressure on the heart-muscle is produced, which becomes considerably compressed, and there is marked reduction of the blood-pressure in the arterial system, with a double or triple pulse in the arteries, and a reduction in the pulsation of the diastole. In lengthened inspiration the diastole is increased, and, in consequence, there is a stronger degree of filling of the auricle and ventricle. As the vascular system is thus emptied, the work of both ventricles is considerably facilitated by the increase of the vigor of systole, and flow of blood into the coronary arteries is increased, and with the gradual increase of the pressure there is complete emptying of the venous blood and lymph out of the heart-muscle.

Oertel claims that this massage of the heart, especially the employment of slight pressure of short duration, is indicated in all states of weakening of the heart-muscle, in states of insufficient fulness of the arterial system or of venous stasis, in all cases where greater work is demanded of the heart as a consequence of heart-failures, and especially in acting as an assistant to the heart in mountain-climbing, etc.

It is contraindicated in endo- or pericarditis, in acute or subacute myocarditis as a consequence of sclerosis in the coronary arteries, and in sclerosis and atheroma of the arteries.

EFFECTS OF A VERY LARGE DOSE OF ACETANILIDE.

A number of cases have been recorded showing that even moderate doses of antifebrin or acetanilide may be followed by toxic symptoms, but no case has until now been reported in which nearly an ounce of this drug had been taken. It has generally been supposed that the toxic properties of acetanilide are due to the aniline of which it is manufactured, and it was, therefore, to be expected that the symptoms occurring in the two cases would be very similar. Dr. Hartge, of Dorpat, who has recently had ample opportunities of observing a case in which a student who had caught cold had dosed himself with 28 or 29 grammes of acetanilide, in addition to a considerable quantity of spirit, states that the symptoms only very partially corresponded with those mentioned by Dr. Dehio as due to poison-

ing by 154 grains of aniline, and which consisted in blue coloration of the skin and mucous membranes, profound coma lasting for several days, irregularity and quickening of the respiration, acceleration of the pulse, the smell of aniline in the breath, loss of power of motion, considerable disturbance of the sensory powers, followed by jaundice, with anæmia, albuminuria, and hæmoglobinuria. It is probable that this aniline was by no means chemically pure, but contained several other substances, especially toluidine, which is nearly always met with in the aniline used for commercial purposes, and in that employed by bacteriologists for staining tubercle bacilli. In Dr. Hartge's case, notwithstanding the enormous dose of acetanilide which had been taken, a quantity which requires five-sixths of an ounce of aniline to make it, or more than twice as much as Dr. Dehio's patient took, there was no loss of consciousness, of motion, or of sensation; no albuminuria or hæmoglobinuria, and only the slightest trace of jaundice; the blood-corpuscles, too, presented their normal appearance and character, there being no detritus or specks of pigment, though the color of the blood was changed to a dark blue, as in aniline-poisoning; also the respiration was rendered rapid and irregular and the pulse accelerated. The patient complained greatly of inability to sleep, and the cardiac palpitation and dyspnœa produced a feeling as of impending death. No medical aid was sought for many hours after the drug had been taken. When Dr. Hartge saw the patient first, he was much struck by the marked blueness of the skin, which was general over the whole surface, but especially dark in the eyelids, the chin, and the temporal regions. There was no puffiness, as in severe cases of asthma, and the general appearance was quite different from that of cyanosis. Although there had been no vomiting, a glass of red wine was immediately brought up, and the stomach was soon afterwards thoroughly emptied, a quantity of bilious matter being evacuated. The treatment consisted in giving sulphate of soda draughts, together with coffee and brandy, also hypodermic injections of camphor in ether, and the application of cold compresses to the head. On the third day the patient was able to leave his bed, and the blue color had entirely vanished. In conclusion, Dr. Hartge, who was fortunate enough to obtain Professor Dragendorff's co-operation in the working out of the case, remarks that there is reason to believe that the acetanilide taken by the patient must have been a remarkably pure specimen.—*Lancet*, April 12, 1890.

THE USE OF TRICHLORACETIC ACID IN AFFECTIONS OF THE NOSE AND THROAT.

The many disadvantages which attend the use of chromic acid in applications to the nose and throat have lead Dr. Ehrmann, assistant at the Heidelberg Laryngological Clinic, to substitute for it trichloracetic acid, originally recommended by Dr. Stein, of Moscow (*Wiener Medizinische Blätter*, March 20, 1890).

Trichloracetic acid (CCl_3COOH) occurs in the form of colorless, transparent, rhomboidal crystals of slightly penetrating odor strongly caustic, soluble in water and alcohol, and rapidly becoming fluid when exposed to the air. The crystals melt at 52° C. and boil at 195°, with the production of a strongly irritating, aromatic vapor, and entirely evaporating without leaving any residue. Dr. Ehrmann's experience embraces one hundred and seventy cases, in one hundred and forty of which the trichloracetic acid was used as a caustic. Dr. Ehrmann's method of application consists in applying a moist crystal of this acid by means of a silver probe, and rubbing it over the part which it is desired to cauterize. At first he employed an ordinary silver probe, later on he made use of a silver sound, of which the head was hollowed out in front, thus forming a cup-shaped extremity, in which a smaller or larger number of crystals might be placed. By this means accidental cauterization of healthy parts may be avoided. When the cautery was applied to the nasal mucous membrane a ten per cent. solution of cocaine was first used to deaden sensibility. Immediately after the application of this cautery a bright, ivory-white scab is formed, which remains absolutely localized to the point of application of the cautery. It differs from the slough produced by chromic acid, in that it is uniformly thick, is inodorous, produces no unsatisfactory action, and leaves no unpleasant after-effects. The effects of the cauterization have usually entirely disappeared within five or six days. The procedure may, if necessary, be repeated. The great advantage of the method consists in the fact that it produces no inflammatory after-effects, and is in this respect

preferable to the galvanic cautery, in that it is more free from the unfavorable consequences which attend the use of other cauteries following the employment of trichloracetic acid; and it is especially worthy of note that in no case did its employment ever produce any secondary hemorrhage, and, in fact, in three cases it was used with success as a hæmostatic.

When cocaine has been used, no pain, with the exception of slight burning, which passes off in a few minutes, is ever complained of.

In the mouth and pharynx no symptoms were ever produced, or were quite trifling, even although cocaine was not used. The application was, in fact, almost painless, with the exception of slight burning. No vomiting, coughing, or difficulty of swallowing was observed. The cases in which Dr. Ehrmann employed this substance as a cautery were of the most diverse nature, and of the one hundred and forty, in eighty-seven cauterization was once employed, in thirty twice, and in the other cases from three to five times.

The author notes further that two or three applications are usually quite sufficient to reduce the highest degree of hypertrophy of the turbinated bone. Of these one hundred and forty cases, only eleven did not return for treatment. Of the other one hundred and twenty-nine, in one hundred and twenty-two final complete cure was attained.

The author thus recommends in the most emphatic manner the use of trichloracetic acid as a local caustic for the nose and pharynx as in this mode of employment far preferable to any other.

THE USE OF COCILLAÑA AS AN EXPECTORANT.

In the *New York Medical Journal* for April 5, 1890, DR. L. HARRISON METTLER publishes notes of five different cases, which illustrate the value of cocillaña as an expectorant. These cases seem to show that at first cocillaña acts as a stimulant expectorant, for although the cough and the expectoration are both at first somewhat increased, as the action continues it becomes sedative, and by overstimulation diminishes the expectoration. It further acts upon the alimentary mucous membrane, causing emesis and catharsis after administration in high doses, but this latter effect does not interfere with its employment as an expectorant, since the dose for that purpose is much below that required to produce nausea or diarrhœa.

Further, Dr. Mettler calls attention to the fact that its cathartic action and nausea need not be feared, unless injudicious dosage be employed. Dr. Mettler has noticed a feeling of weakness and depression to occasionally follow the use of full doses. This difficulty, together with the fact that it is a stimulant, particularly in the form of the tincture, leads to its contraindication in phthisis and all those pulmonary affections having associated with them marked emaciation and debility. In the acute affections of the air-passages cocillaña should never be employed in the earlier stages when the mucous membranes are engorged and the cough is merely of an irritative sort without expectoration. As soon, however, as the period of exudation arrives,—usually from a week to two weeks after the subsidence of the acute inflammatory symptoms; in a word, when the trouble is about becoming subacute,—the use of full doses of the drug will give the happiest results. In the chronic forms of bronchitis, when there is an expectoration that is scanty, thick, and tenacious, the best results have been secured and positive cures obtained. In capillary bronchitis and in the chronic forms of broncho-pneumonia, cocillaña fails to give uniform relief, and for these the writer still retains his preference for the ammonia salts. Dr. Mettler prefers the fluid extract to the concentrated tincture, both for its smaller dosage and greater uniformity of action. In regard to the dose, 10 drops, sometimes 15, of the fluid extract may be given every three or four hours. This would be an average, though we have no doubt but that some cases might bear even 20 or 25 drops. Nausea would be the proper indication that the maximum dose for a certain individual had been reached; hence in some cases the author has ordered the patient to increase the quantity until this effect was first noticed. As the physiological activity of the drug seems to terminate in about six hours, the greatest benefits will be obtained with the doses taken from three to four hours apart. We believe that in cocillaña we have a valuable addition to our materia medica. Of the drugs with which we are already familiar, it resembles most nearly ipecacuanha, and yet its action is sufficiently unlike that of the latter to warrant its being considered a remedy *sui generis*.

TINCTURE OF NAREGAMIA—A NEW EXPECTORANT.

In the *Centralblatt für die Gesammte Therapie*, March, 1890, DR. SCHOENGUT publishes the results of some studies which he performed under the direction of Professor Drashe with a preparation, introduced by Messrs. Parke, Davis & Co., obtained from the *Naregamia alata*, a plant indigenous to Goa. The active principle of the plant is found in the bark, which, when rubbed up, forms a light brown powder, of a peculiar aromatic odor and nauseous taste. According to Hooper, the ethereal extract of naregamia contains an alkaloid, which, after precipitation and drying, occurs in an amorphous powder, which forms crystalline salts with sulphuric, nitric, and hydrochloric acids. From solution it is precipitated by tannin and potassio-mercuric iodide and phosphomolybdate of sodium. It is distinguished from emetine by the formation of crystalline salts with distinct color with acetic acid, while it differs from the cinchona alkaloids by its optical inertness.

Naregamia, in addition to the alkaloid, contains oil, sugar, resin, and other substances; according to Hooper, also, a nitrogenous body may be precipitated from watery extracts, which crystallizes in large, colorless, rhombic prisms, very similar to asparagine. The plant contains no tannin, but contains an organic acid, which is precipitated from alcoholic extracts with acetate of lead.

In India naregamia enjoys considerable repute in domestic practice as a cholagogue, and it has been used in dysentery and as an expectorant with considerable success. At the suggestion of Professor Drashe, Dr. Schoengut tested the value of the tincture of naregamia in twenty-four different cases,—one of dysentery, one of pleurisy, two of pneumonia, four of emphysema, five of bronchitis, four of cardiac disease, and seven of pulmonary tuberculosis,—16 to 50 drops being given daily.

In the case of dysentery, the author states that no effects were noted, and the studies were, therefore, restricted to its use in diseases of the respiratory organs. The cases in which the author found it to produce the best effects as an expectorant were when there was but slight secretion in the air-tubes, accompanied by severe cough, or where thick, tenacious sputum interfered with expectoration. In one case of bronchial catarrh, with difficulty in breathing and asthmatic attacks, naregamia effected especially good results.

The author's results seem to show that naregamia considerably facilitates secretion, and renders the secretion in air-passages more fluid, even increasing them in amount. It also seemed to facilitate respiration, the respiratory movements becoming deeper and more regular, although experiments made on animals in the laboratory of Professor von Basch failed to show any direct influence on the respiratory centre.

Naregamia seems to possess no influence on the circulation, even when injected into the veins in dogs, not producing any change in blood-pressure, with the exception of a transient increase of pressure. Its action in reducing tenacity of secretion thus renders it somewhat similar to emetine, although the emetic effects of naregamia are much less marked than of the former. Rossbach has shown that emetine acts apparently directly on the mucous glands of the trachea and bronchi, and so produces great increase of secretion, without any modification in the blood-supply of the part. It, therefore, acts directly on the glands, and is thus a true secretory stimulant. Dr. Schoengut has also obtained similar results from the experiments made with naregamia on curarized animals, in which an increase of tracheal and bronchial secretion was produced, without any modification of either blood-pressure or heart-action. On the other hand, in rabbits, as is well known, which do not vomit, while large doses of ipecac reduce the activity of the heart, respiration, and temperature, similar experiments made with naregamia show that these depressing effects are absent. Although the subject requires further observation, it would appear from the author's results that naregamia is a direct stimulant to the glands of the respiratory tract. Naregamia exerts no influence on the digestive organs, with the exception that in certain instances it may produce nausea, or perhaps vomiting. The disagreeable taste of the tincture, concerning which numerous complaints were advanced by the patients, may be overcome by the combination of the tincture with laurel-water. No change, either in the quantity or quality of the urine, follows the use of this drug. It would thus appear that the remedy possesses the power of stimulating the respiratory secretion, and, by increasing the energy of coughing, facilitates its removal. Further, it is free from any toxic action. The author offers no conclusions as to the value of naregamia compared with other expectorants, though he believes that his observations warrant the conclusion

that in private practice, especially in cases where numerous other remedies have been already employed, naregamia may frequently be employed with value, and is, therefore, to that extent a valuable addition to our materia medica.

THE TRANSMISSION OF TYPHOID FEVER BY THE AIR.

The principal characteristic of contemporary medical science is the attempt, which in many cases has been largely realized, to determine the mode of propagation of infectious diseases. Although much still remains to be accomplished, yet immense progress has been realized in this direction, and it is hardly necessary to say that when these questions in etiology receive their solution, prophylaxis will at the same time be greatly advanced. In the case of typhoid fever as yet but one mode of explaining the spread of this disease is recognized, and that is through the mediation of water, or of drinks accidentally charged with typhoid discharges; but the question as to whether water is the sole vehicle for the typhoid bacillus can only be answered by the recognition of the bacillus in the air, and by the establishment by clinical observation that typhoid infection may occur through the pulmonary passages.

Recently M. FREDERICK BORDAS (*Gazette Médicale de Paris*, March 22, 1890) has undertaken a series of researches, which appear to show that the bacillus of typhoid fever should be classed among the aërobic microorganisms. He has recognized that this bacillus remains inactive in dry air completely deprived of vapor, and that it continues to live and even to multiply in an atmosphere more or less charged with humidity. This last explanation is especially important, as offering an explanation of certain peculiarities which have as yet escaped satisfactory explanation; such, for example, as the great frequency of typhoid fever in October and November, months which are ordinarily accompanied by the greatest atmospheric humidity. The experience of Dr. Bordas further shows that the contagion of typhoid fever may be for a long time preserved in its activity, and that the explanation of this is largely found in the fact that the periods of prolonged dryness, which are the cause of destruction for the bacilli, are relatively rare.

Finally, there is nothing impossible in the belief that the bacillus is capable of directly penetrating into the respiratory passages and thus starting the typhoid infection.

MASSAGE OF THE EAR.

The *Archives of Otology* for 1886 tells us that Hommel has discarded the usual methods of mechanical treatment of the membrana tympani and ossicles, and advocates a new method, which he calls *Tragus-Press*. Acting upon the supposition that pressure of the tragus upon the meatus renders the canal air-tight, and condenses the air therein sufficiently to act directly upon the membrani tympani, he releases the pressure upon the tragus, and the sudden escape of the compressed air produces a vacuum and traction upon the membrane. Compression and attraction of the membrane are thus rapidly produced by exerting and relaxing pressure upon the tragus. Hommel suffered from chronic catarrh of the middle ear, and experimented in this way upon himself, and found that his hearing improved in several months from 10 and 40 centimetres for the watch to 150 and 610 centimetres. A similar result was obtained in a boy who suffered from a perforation on one side, and thickening and retraction of the membrane on the other. Prior to this mode of treatment the watch was heard only at 5 centimetres by the left ear and 12 by the right. After nine months of treatment the hearing had improved to 160 and 340 centimetres respectively. Hommel advises this sort of treatment in chronic catarrh of the middle ear; in perforations of the membrane, the handle of the hammer still being in connection with the membrane; in thickening and opacities of the membrane, and as a prophylactic against deafness developing in old age.

In the United States this treatment is usually relegated to the patients themselves, and in the above-named conditions it is not likely that they could make themselves any worse. But harm has been reported as a result of this procedure, and if any one will have it tried on his own well ears he will find considerable discomfort therefrom, suggestive of mischief if kept up.

A much more agreeable and efficacious method than that of Hommel is suggested by DR. DOUGLAS GRAHAM in the *Boston Medical and Surgical Journal* for April 3, 1890. Dr. Graham's method of accomplish-

ing massage of the ear is to apply the hand so that the muscles in front of the metacarpal bone of the thumb will fit accurately into and over the auricle, the right hand for the left ear and the left for the right, and by making moderately strong, circular kneading in a direction backward, upward, and outward, powerful but pleasant compression and suction are created, sensible to the hand of the operator as well as to the ear of the patient. This has none of the disagreeable feeling of "plop, plop, plop," like shooting peas into the ear, which the "*tragus-press*" of Hommel has. Indeed, Hommel's method makes no suction at all (except in theory), for the compression of air which it causes is so slight that its sudden liberation cannot produce any appreciable vacuum, as claimed by its advocates. That benefit has resulted from it there is no doubt, but we must look for a reason other than that given, and it is undoubtedly this, that the vessels of the cavity of the tympanum and the drum membrane anastomosing at the tragus, alternate compression and relaxation of the tragus, produce a pump-like action on these vessels, which draws the blood outward, thus making the circulation go on more lively, bringing more nutritive material, and removing more waste products, as massage does in any other part of the body. But the more agreeable method which Dr. Graham advocates possesses the same advantages also, besides affording very decided compression and suction of air in the external auditory canal.

When desired, the auricle can be grasped at the same time by the fingers behind it, the muscles at the base of the thumb in front, and a circular traction, with the strongest pull upward, backward, and outward exerted; but this does not afford so much compression and suction as when the auricle is not grasped. These procedures can be advantageously varied and their effect increased by *effleurage* or stroking in front of the ear and on the side of the neck, which rapidly aids the return of the blood in the temporal vein and jugulars, and hastens the flow in the lymphatic vessels at the same time, and thus depletes not only the ear but the whole head as well. Passive and resistive movements of the head would also quicken the circulation of this region. The head and face may also be *massèd* at the same sitting, which, besides its revulsive effect, will also have a sedative influence by means of the communication of the fifth pair of nerves with the otic ganglion.

TREATMENT OF ACNE.

The medical treatment of acne is based almost exclusively on the employment of external remedies, with the regulation of the diet. Internal treatment has proved to be of but little avail. To this end excessive use of meats and spices should be forbidden, but the principal reliance must be placed upon the external use of topical applications, which may be either stimulating or destructive.

The first group comprises a series of remedies which exert a slight stimulating action on the skin, such as warm lotions repeated several times through the day, or spraying with watery vapor. Various soaps may also be employed, and friction with powdered soap will also give good results, if applied vigorously for five minutes when the acne occurs on the face, ten minutes when on the back. This process should be repeated twice daily until a certain amount of irritation is produced.

If these measures do not suffice to produce cure DR. A. FOURNIER (*La France Médicale*, March 14, 1890) recommends the application over the part of an ointment, consisting of 20 parts by weight of lard or vaseline, 2 parts precipitated sulphur, 3 parts essence of rose, or 15 parts by weight of sulphur may be dissolved in 30 parts of camphorated alcohol and 250 parts of water. This lotion should be used in the evening, and not rubbed off until the following morning. The author states that this simple means will ordinarily suffice in light cases. In some rebellious cases friction with oil of cade may be employed, or Vigo's plasters will also sometimes give good results, and should be employed every night for five or six days successively. Black soap produces the most intense irritation, and sometimes may even cause a true inflammation of the skin, so that the patient before its employment should be warned as to the symptoms which will attend its use. Here, also, the application should be made in the evening for four or five days in succession, and the soap only washed off on the following morning with warm water; emollients should then be applied for several days, and then the treatment recommenced. At the end of six weeks the result is generally a satisfactory cure, although, unfortunately, in many cases, the treatment cannot be persisted in. If all these means fail, more energetic measures must be resorted to, of which the most simple is scarifying or cauterization by means of the ignipuncture.

A METHOD FOR ARRESTING THE SPASMS OF WHOOPING-COUGH.

In the *Journal de Médecine de Paris* for March 9, 1890, NAEGELI claims that in two different children he has succeeded more than five hundred times in apparently arresting the spasms of whooping-cough by pulling the lower jaw downward and forward. He states that the result of the procedure is not due to psychic influences, for this method succeeds even during sleep. The parents of the children may themselves employ this procedure, as it is perfectly simple and completely harmless, only it should not be done when the mouth contains food. It is stated that the regular suppression of the spasms of whooping-cough exerts a favorable influence on the progress of this disease, and by preventing the attacks it considerably reduces the mortality of this affection.

CHLORALIMIDE.

Attention has recently been called to the possible value as a medicinal agent of chloralimide. Chloralimide, $CCl_3 - C\frac{H}{NH}$, a substance that must not be confounded with that recently introduced as "chloralamide," which is more correctly designated chloral formamide (*Compt.-Rend.*, cix. 817). Chloralimide was first described by Messrs. Pinner and Fuchs, who obtained it by the action of ammonium acetate upon chloral hydrate (*Berichte*, x. 1068), but Messrs. Behal and Choay now claim that it can be obtained in a state of greater purity as a residue from the action of heat upon chloral ammonia. The product so obtained is described as forming long colorless and tasteless needles, slightly soluble in water, rather soluble in alcohol, and very soluble in ether. It is very stable, not being altered by air, light, or moisture, or by heating in a sealed tube to 150° C. in the presence of water; but at 180° it is said to be decomposed into chloroform and formamide. In contact with a liquid acidulated with a mineral acid it is stated to be decomposed into chloral and the corresponding ammonia salt, but this reaction does not occur with organic acids (*Repertoire*, March 10, p. 109). Further, it is affirmed that, in doses of .25 to .50 gramme (4 to 8 grains), chloralimide has been ascertained to possess remarkable antipyretic and analgesic properties. M. Choay also claims that it would surpass chloral ammonia or chloral formamide in activity, since an equal weight would yield more chloroform than either, while it presents the advantage of being stable and free from unpleasant taste and odor. Herr Ritsert, referring to this substance (*Pharm. Zeit.*, March 15, p. 166), points out that the name applied to it—chloralimide—is not free from objection, since chloral, as an aldehyde, is characterized by an hydroxyl group, which is no longer present in this compound. He thinks it would be more scientific to speak of it as trichlorethylidenimide. Further, the statement that the compound is split up by heating to 180° into chloroform ($CHCl_3$) and chloral and ammonia salts is considered by him to be in contradiction to what is known of the decomposition of chloral, and he thinks proof is required that the compound so described corresponds to the formula attributed to it, or is identical with the chloralimide prepared by Pinner.—*Pharmaceutical Journal and Transactions*, March 29, 1890.

INTRA-MUSCULAR INJECTIONS OF MERCURY IN THE TREATMENT OF SYPHILIS.

In the last part for 1889 of the *Archiv für Dermatologie und Syphilis*, DR. WATRASZEWSKI discusses the effect of the injection of insoluble mercurial preparations into the muscles. The mercurial salts, recommended for their parasiticide effect on theoretical grounds, have not shown any advantage, and practically the question of advantage lies between calomel, the yellow oxide, and the gray oil of mercury. With respect to calomel, while it is undoubtedly very effectual in the treatment of syphilis, it has proved dangerous to the patient, Runeberg having collected seven fatal cases; but the author found that dangerous symptoms could to a great extent be avoided by reducing the dose originally suggested by Smirnoff from 3 grains to not more than ⅔ of a grain, and this, too, without sacrificing its therapeutic efficacy. He regards the gray oil, as recommended by Lang and Neisser, as still more dangerous, instancing Kaposi's fatal case and Hallopeau's case of severe stomatitis, and several cases of fat embolisms in the lungs, which are on record. The author expresses, therefore, a decided preference for the yellow oxide of mercury, but in the reduced dose of ⅔ to 1 grain. These doses he has given thousands of times without ill effect, while the doses originally recommended—of from 2 grains to 2½ grains—have produced serious symptoms, such

as adynamia, diarrhœa, stomatitis, etc. The choice of the vehicle for injection is not unimportant. Those hitherto used have been generally glycerin, olive, almond, or paraffin oils, or gum arabic mucilage. The author made experiments on this point, injecting these vehicles alone into the jugular veins of cats, and found that serious embolic pneumonia was excited by the oily fluids, while the mucilage only produced scattered embolic foci of small size, which were absorbed without subsequent reaction of any importance. These experiments have a practical bearing, for in intra-muscular injections a vein is occasionally pierced, and serious pneumonia has ensued. Glycerin excites local irritation, and is therefore unsuitable. Dr. Watraszewski, therefore, finally decides that mucilage (gum arabic, 1 part; water, 120 parts) is the best, as it combines all the essentials of a vehicle,—viz.: 1. It can be made of the proper consistence to hold the powder in suspension. 2. It has no local irritating effect. 3. It does not decompose the mercurial salt. 4. It excites no general disturbance. In the same number Touton relates a case in which, a few hours after the third injection of salicylate of mercury into the left gluteus muscle, that muscle seemed paralyzed, and then tenderness and pain were felt radiating up to the sacrum and lower lumbar vertebræ, but abruptly terminating at the middle line. The pain lasted two days, but twenty-four hours after its commencement there appeared an abortive herpetic eruption,—*i.e.*, the eruption consisted in papules, which did not develop into vesicles. It was distributed in three groups of firm papules in the course of the left posterior femoral cutaneous nerve; and as this takes its origin from the lumbar plexus, while the injection was in the domain of the sacral plexus, Touton argues that it was reflexly, and not directly, produced by the injection.—*Lancet*, March 8, 1890.

SUB-BENZOATE OF BISMUTH IN THE TREATMENT OF SOFT CHANCRE.

Iodoform is about the best topical application in the treatment of soft chancre, but its tell-tale odor is a very serious objection to its administration when the patient cannot be confined to his chamber. In consequence other methods must be substituted for it, and of these Dr. Finger (*Lyon Médicale*, March 2, 1890) claims that the sub-benzoate of bismuth is the best. When this substance is powdered over the sore, a slight burning sensation is at first felt, but rapidly passes off, and no local irritation of any kind is occasioned by its use. In three or four days or more, rarely five or six, the chancre assumes a healthy appearance, and rapidly progresses towards cure, the final stages of which may be accelerated by the employment of a two per cent. mixture of carbolized vaseline.

The sub-benzoate of bismuth is obtained by heating the subnitrate of bismuth with nitric acid and benzoate of sodium. It is a white powder, with a slightly aromatic odor.

THE EXCRETION OF MORPHINE IN THE MILK.

Numerous cases of poisoning are on record in which the administration of opium or morphine to a nursing mother has produced toxic symptoms in the infant. Dr. Pinzanni (*Journal de Médecine de Paris*, March 9, 1890) has, however, found that when morphine is given in therapeutic doses it is not eliminated by the mammary gland as morphine, but it is in the body changed to apomorphine, and in this form is eliminated in the milk.

Dr. Pinzanni made twelve experiments on nursing women, giving to each of them either 30 drops of laudanum or 4 grains of morphine, distributed in divided doses through several consecutive days, ½ grain being given during the first day, and the dose being slightly increased after each succeeding day until the total amount was given. The milk was then collected morning and evening and analyzed, the albuminoids being precipitated by the method of Ritthausen.

It was found that the entire amount of morphine was not so eliminated either as morphine or as apomorphine, and that in certain instances it apparently was not eliminated in any marked degree. It should be noted, however, that this latter conclusion has been contested by Fehling, Tarnier, and Chantreuil, who especially lay stress upon the danger of believing that any preparation of opium can ever be given to a nursing woman without seriously endangering the life or health of the infant; and Fehling records a case of poisoning occurring in an infant in which laudanum had been given to the nurse. Of course, this fact does not prove that in certain instances morphine may not be eliminated by the mammary gland, but that does not relieve one of responsibility and recognition of the necessity for caution in giving opiates to nursing women.

Reviews.

LECTURES ON NERVOUS DISEASES, FROM THE STAND-POINT OF CEREBRAL AND SPINAL LOCALIZATION, AND THE LATER METHODS EMPLOYED IN THE DIAGNOSIS AND TREATMENT OF THESE AFFECTIONS. By Ambrose L. Ramsey, A.M., M.D., etc. Profusely illustrated with original diagrams and sketches in colors by the author, carefully selected wood-cuts, and reproduced photographs of typical cases.

Philadelphia: F. A. Davis, 1888.

From its title the reader may expect a work on nervous diseases of a very different character from the standard works with which he is acquainted. Cerebral and spinal localization have shed already a great light upon obscure points, and will in the near future revolutionize our methods of diagnosis and treatment, as well as our views as to the location and exact nature of many diseases. The author devotes considerable space to the method of examination of cases, and goes very thoroughly into the question of "eye defect" and "eye-strain" in the causation of many diseased conditions. The author gives a full *résumé* of the researches of Dr. Geo. T. Stevens, and has also thoroughly studied the question himself. He says in regard to this point, "No other treatment has ever yielded me such satisfactory results in severe forms of epilepsy, chorea, hysteria, neuralgia, headache, insanity, and functional visceral derangements. As no drugs were employed by me in many of these cases, the relief obtained must be attributed solely to the method of treatment."

The reader will find, perhaps, the most interesting portion of the book, and the one most likely to afford him new and valuable views of disease and treatment, is the section on "Functional Nervous Diseases." Here the author treats of the "relationship between functional neuroses and anomalies of the visual apparatus." The author gives us the following statements, which form the basis of his remarks and observations, and are so clear and so suggestive that we reproduce them: "1. Errors of refraction often modify apparent muscular anomalies to such an extent as to render the early detection and correction of the refractive errors imperative. 2. Errors of refraction can only be positively determined after the full effects of atropine. 3. No examination for suspected muscular error in the orbit should be regarded as conclusive for diagnosis, or as a basis for any surgical procedure, until the eye has been proven to be free from refractive error or rendered as nearly emmetropic as deemed advisable by properly-selected glasses. 4. All tests employed to detect muscular anomalies must be made with the test-object (candle-flame) at a distance of at least twenty feet from the eye. The 'line and dot test' should also be employed. 5. Observations made for muscular anomalies in the orbit, when the test object is within the limits of accommodation, are not usually reliable as a basis for operative procedure undertaken for their relief. 6. Muscular anomalies in the orbit may be partially or totally latent. 7. Prismatic glasses are not only inadequate as satisfactory remedial agents in most cases, but they may be positively injurious to certain classes of cases. 8. Graduated tenotomy is the only way of satisfactorily and permanently relieving abnormal tension of a muscle in the orbit." The author believes that the difficulties previously experienced in relieving cases of this class are now satisfactorily removed, and that eye-strain from any cause is a serious matter, both predisposing to and perpetuating nervous derangements.

Starting with these points assumed, the author then goes on to illustrate, by cases of his own observation, the remarkable way in which improvement is brought about—and cure also—by acting on these principles. This, to the reader who has been taught to regard astygmatism as the principal cause of eye-strain, and prisms as a very fair substitute for muscular deficiency or excess, will prove of much interest, especially since the author in this portion of the book writes "*con amore*," and is at his best. The electrical portion of the work will be found quite full, and the book, as a whole, well worth owning. E. W. W.

SPINAL CONCUSSION SURGICALLY CONSIDERED AS A CAUSE OF SPINAL INJURY, AND NEUROLOGICALLY RESTRICTED TO A CERTAIN SYMPTOM GROUP, FOR WHICH IS SUGGESTED THE DESIGNATION ERICHSEN'S DISEASE AS ONE FORM OF THE TRAUMATIC NEUROSES. By S. V. Clevenger, M.D., etc. With thirty wood-engravings.

Philadelphia and London: F. A. Davis, 1889.

If the author of this book could by force make every surgeon and, if possible, every practitioner familiar with the subject of which it treats, he would confer a priceless boon on the well and on the injured, on the judges, jurors, and advocates, and, lastly, on the medical witnesses themselves. His suggestion of the name of Erichsen's disease seems to us to have been already made, but his thorough analysis of Erichsen's work shows how appropriate the name would be were it not for the bad taste of making any disease a monument to any man. Bright, Graves, Pott, and Thomsen, and many more, are embalmed in this

way. While the great ones of the earth—the soldier, who destroys; the jurist, who perplexes us; the saint, who strives to improve us—have their monuments in bronze and marble, the physician, far more useful to poor humanity, must be content to go down to posterity associated with some loathsome or painful disease or injury, but disease cannot be a memorial of the man who investigated it without attaching his name directly to it. No matter how disreputable the disorder, we do not know that the modesty of any man has so far led him to disclaim such a title to distinction, as witness the Hunterian chancre and the gonococcus of Neisser. History fails to tell us that Hunter ever suffered from the one or Neisser from the other.

The author has not only given us an epitome of the work of Erichsen in this field, but has provided the reader with an analysis of the work done by Page, Leyden, Erb, Spitzka, Putnam, and many others, so that the reader can get from one book almost at first hand the views of the many workers in this field. Under the head of "Recent Discussions of Spinal Concussion" there is brought together an immense number of facts, observations, theories, and explanations from various authorities. Oppenheim has a whole chapter devoted to his "traumatic neuroses."

The author's own personal observations begin with chapter vi., and include many cases personally noted,—a chapter on "Traumatic Insanity," one on "The Spinal Column," one on "Symptoms of Erichsen's Disease (Spinal Concussion);" very excellent chapters on "Diagnosis," "Electro-Diagnosis," "Differential Diagnosis," "Pathology and Treatment." The last part of the work is entitled "Medico-Legal Considerations," and contains many points of interest and of practical value to the medical witness. In short, the book is convenient, concise, and yet covers the ground much more satisfactorily than more labored and diffuse works on the subject.

E. W. W.

Wood's Medical and Surgical Monographs. Vol. IV., No. 3. December, 1889.
New York: William Wood & Co., 1889.

This number contains a goodly collection of articles of interest. A treatise on "Baldness," by Dr. Geo. T. Jackson; a very valuable paper on "The Sphere, Rights, and Obligations of Medical Experts," by James O'Dea, M.D.; one on "Pathology and Treatment of Ringworm," by Geo. Thin, M.D.; "Notes on Dental Surgery," by J. Smith, M.D., L.L.D.; and "On Sounding for Gall Stones, and the Extrusion of Gall-Stones by Digital Manipulation," by Dr. Geo. Harley, F.R.S. The author of the article on "Baldness" has given us a very useful book, and one that inculcates sound ideas of treatment. Perhaps on no topic are the public more at the mercy of unsafe and ignorant guides, the educated physician paying too little attention to the subject till years have rendered him a victim himself, and then even considering it rather a good thing, and one likely to increase his reputation for sound age and profundity. Women, despite the curious arts of the hair-dresser and the devices of the wig-maker, are the greatest sufferers, and their appeal, seldom made to educated authority, meets, when it is made, with but poor response from that source. But the manipulator, the hair-tonic vender, the hair-dresser, and the druggist's clerk, are all eager exponents of their own remedies and methods.

Concerning that most exasperating baldness,—the alopecia areata,—the author thinks the microbian theory "unproved." He finds it difficult to answer as to its being contagious, and would reply that "Lelvir's conclusions are plausible,—viz., that there are three classes of alopecia areata, viz., tropho-neurotic, cases apparently causeless, and contagious cases, where contagion could be proved but no parasite actually demonstrated." Dr. O'Dea's monograph is on a timely subject, and if studied carefully, will tend to establish in the mind of the medical witness such fixed and rational ideas of what he should and should not say, as will make a better witness and a more respectable figure in the future. Dr. Thin's monograph on "Ringworm" is exhaustive, and a standard authority on the subject.

E. W. W.

Chronic Urethritis and other Affections of the Genito-Urinary Organs. By M. Berkeley Hill, F.R.C.S.
London. H. K. Lewis, 1890.

This brochure consists of three lectures, which were delivered at the College of Surgeons, and is more especially devoted to the description of the lesions which may be produced by the inflammatory process within the urethral canal, studied by means of reflected light. The colored plates which illustrate the work assist very much in demonstrating the actual appearances of the mucous membrane of the urethra in the different stages of inflammation.

From the investigations of Mr. Hill, the

endoscope, when used to study the effects of the inflammatory process in the urethra, shows that the acute process may result in producing a chronic inflammation of the canal, and that this condition may be:

"1. Superficial granular thickening of the mucous membrane.

"2. Inflammation of the glands and lacunæ.

"3. Areas of induration, which mucous tissue will be converted into fibrous tissue if the inflammation continues some months.

"4. Patches of fibrous tissue penetrating beyond the mucous tissue."

The success of any method of treatment must depend upon a knowledge of the nature of the lesion to be treated, and when different lesions may give rise to the same symptoms, it follows that very often the symptomatic treatment of diseases is positively wrong. In chronic urethritis we have an example of this class of affections,—that is to say, the symptom gleet is present; but the cause of the symptom may be due to several pathological conditions, and it is the correct recognition of the morbid change, giving rise to the symptom, that will indicate the proper line of treatment. The endoscope in Mr. Hill's hands not only indicates the pathological lesion, but is also an instrument by means of which the diseased parts may be directly reached, and from his experience this affection is only to be treated successfully by local applications,—nitrate of silver solutions for granular areas, and gradual dilatation for indurated areas. In so far as the treatment of the affection is concerned, the author offers nothing new, but the method of application and the time when to apply our remedies are indicated by the employment of the endoscope.

The third lecture is devoted to the prostate gland, in which is considered prostatitis and tubercle of the prostate. The former, as prostatic catarrh, and chronic inflammation of the substance of the gland, is described as seen by the endoscope; its treatment does not differ from that usually given. The obscurity which generally accompanies tuberculous disease of the genital organs is such that any information which may assist in removing the difficulties of diagnosis in these cases is always welcome. Therefore the observations of Mr. Hill on tubercle of the prostate are of special interest, and contain much that is important, especially in regard to the treatment of the affection.

J. H. C. S.

THE PHYSICIAN'S LEISURE LIBRARY. SOME FALLACIES CONCERNING SYPHILIS. By E. L. Keyes, M.D. Detroit, Mich.: Geo. S. Davis, 1890.

There are few—perhaps we would be more correct to say there are none—who have practised medicine for even a short period who have not during that time been confronted with just such questions as are answered by Dr. Keyes in the small book before us, and it may be that even now they are in doubt as to their proper solution. To all such we believe Dr. Keyes has in most instances given a satisfactory answer; at least we have the opinion of one who has had a large experience in this very common affection, and one whose views must carry great weight with the medical profession, for as a teacher and writer none stand higher than Dr. Keyes in all relating to diseases of the genito-urinary system and venereal affections. Upon some of the doubtful points, on which most writers do not give definite answers, and leave us very much at loss as to the possible nature of the lesion or the method of treatment to be adopted, the author has given us his views in quite positive language, which, if they do not agree with ours, are those of one who has had a very large experience in this special branch of medicine, and should be carefully considered.

J. H. C. S.

A NEW MEDICAL DICTIONARY. By George M. Gould, B.A., M.D., Ophthalmic Surgeon to the Philadelphia Hospital and Clinical Chief of the Ophthalmological Department of the German Hospital, Philadelphia. Philadelphia: P. Blakiston, Son & Co., 1890.

The preface states that this work is designed to cover a large number of words which have been recently coined in the study of bacteriology, ptomaïnes, leucomaïnes, and the various special branches of medicine. The author further claims that he has framed all definitions by the direct aid of standard authorities, and that obsolete words have been omitted. The result is a work of handy size,—a little over five hundred pages in thickness,—and one which is claimed to contain several thousand words not contained in other dictionaries of its size.

One of the most admirable features in Dr. Gould's dictionary is found in the elaborate and complete tabulation of large groups of facts. Thus we have tables of the micro-organisms, ptomaïnes, and leucomaïnes; of muscles, nerves, arteries, ganglia, plexuses; of abbreviations, prefixes, and suffixes used in medicine; of comparison of thermometers; of weights and measures; mineral springs; vital statistics, etc. These tables

must prove very serviceable, and are not to be found in any other work of the kind, the table on leucomaïnes and ptomaïnes giving their chemical composition, with name of their discoverer, their sources, and their physiological action, while the micro-organisms are arranged in tabular form, with their habitat, their characteristics, their behavior in different cultures, and their specific actions. This is a feature, which, as far as we know, is an original departure in medical literature, but one which will, we know, be of great value. We know of no work in which so many important and yet isolated facts may be obtained without great expenditure of time. The tables of muscles, nerves, arteries, etc., seem to be very complete, and, in looking through the dictionary, we are struck by the good press-work, clear type, and handsome paper, while no one of the many words which it occurred to us to look for have been found absent.

A Reference Handbook of the Medical Sciences, embracing the Entire Range of Scientific and Practical Medicine and Allied Science. Edited by Albert H. Buck, M.D., New York City. Vol. VI. New York: William Wood & Co., 56 and 58 Lafayette Place, 1888.

Our readers will probably remember that we published some time since a review of the eighth volume of this work, but the sixth volume was only received in the editorial office of the Therapeutic Gazette some days since. The title-page of the eighth volume bears the date of 1889; the title-page of the sixth bears the date of 1888, while volume seven has not yet reached us. What all this means we do not know; whether the lacking intermediate volume has been delayed in transit or publication is beyond our ken. Certain it is that only one volume remains to complete this work, which seems to us one of the most useful and one of the most thorough publications that ever issued from the American press. We know of no medical encyclopædia which to us seems to be as useful and satisfactory a book of reference for the busy general practitioner as does this so-called "Reference Handbook."

The articles in the present volume are of an almost uniformly high character. The list of subjects considered is extremely large, and its contents extremely varied. We have found much information, especially upon points of climate and health reports, and other matters of such character as can scarcely be hunted up elsewhere. Volume six commences with "Prairie Itch" and ends with "Teplitz-Schönau;" volume eight commences with "Wormseed." Between "Te" and "Wo" is, therefore, the chasm remaining to be bridged.

Wood's Medical and Surgical Monographs.

August, 1889, contains an excellent article by Dr. Maximilian von Zeissl on "The Treatment of Syphilis at the Present Time," which describes about every recent improvement in syphilitic medication. Dr. Jas. S. Stewart's "Treatment of Inebriety in the Higher and Educated Classes" is a short but earnest plea for longer time and fairer play in the effort to reform the inebriates of the classes he describes. In the home treatment, where, for a proper remuneration, an educated medical man undertakes the sole charge in his own house of one inebriate, and keeps his eye on him, cheers and encourages him, takes him around in his country drives, and in a year or two returns him to society, cured, the only difficulty seems to be that the physician must be quite a rare character, with not too much to do, living in a very healthy rural neighborhood, and quite willing to introduce such an element into his family life. We should fear that the number of such physicians available would be too small "to go round," and that the mass of the great army of educated inebriates might go begging for such a medical paragon as Dr. Stewart recommends.

The most of the volume is taken up with the "Manual of Hypodermic Medication" of Drs. Bourneville and Bricon, which is exhaustive in its study of all known drugs in hypodermic use. This, for reference, will prove an invaluable aid, and cannot fail to suggest to the careful student new uses for his hypodermic syringe, which uncounselled he might fear to employ.

E. W. W.

Correspondence.

LONDON.

(From our Special Correspondent.)

We do not, perhaps, pay sufficient attention to the investigation of the properties of old drugs,—of those whose position has become more or less definite. The greater part of pharmacological and therapeutical research now occupying so many medical scientists in various countries is concerned with the discovery and investigation of new remedies. The remarkable results obtained

from bacteriological work have stimulated the investigation of antiseptic substances, and this is, no doubt, to the great advantage of practical medicine, for practitioners are getting more and more to think that antiseptics and germicides are essential to the combating of disease, especially in our complicated and comparatively unhygienic town-life. Similarly, pathological research is aiding the practitioner in the correct understanding of fever, and it is no matter of surprise that the pharmacologist and therapeutist should seek for new remedies to aid the patient in fighting the fever. Whether the numerous antipyretics which have been introduced are really of great service is a matter of opinion: they certainly do not possess the extraordinary value set on them by some. Pain, too, is always with us; and the symptoms accompanying it, nervous, as a rule, and expressed by the terms neurosis and psychosis, are, no doubt, aggravated by the high pressure of modern life, by the spread of education, of forced excitement, and of the other accompaniments of a busy town-life. To counteract this increase of "pains" in modern life, the pharmacologist and therapeutist have introduced, and are still diligently searching for, remedies to relieve these symptoms,—analgesics, hypnotics, etc. Some of these remedies recently introduced are of lasting value in the treatment of disease,—chloral and cocaine, for example; others have been found wanting.

There is yet another class of remedies which is now receiving some attention,—viz., cardiac remedies. Digitalis, serviceable friend as it is, does not fulfil all the duties in alleviating the symptoms of cardiac failure and disease. The drugs recently introduced are not, however, superior to it; and although it is a desideratum to discover a remedy which will stimulate the cardiac muscle in cases of its failure, it is doubtful if any drug will benefit the decreasing power of a fatty or fibroid cardiac muscle.

With all this activity in the introduction of new remedies (and a very commendable activity it is), too little attention is paid to old remedies; and much might, no doubt, be learned from an investigation of these by the light and with the methods of modern science. It is with some pleasure, therefore, that one turns to the investigations on "salicylic acid," lately published by Professor M. Charteris, of Morgan, in a paper read before the Royal Medical and Chirurgical Society of London. Dr. Charteris commenced by discussing the value of the various modes of treatment of rheumatic fever: his remarks on this subject expressed the generally received opinion of the profession, and need not be repeated here. The important part of his paper, however, was occupied with the differences between the artificial and natural salicylic acids; between that obtained from carbolic acid and that from the oil of winter-green or the oil of sweet birch. Most of the salicylic acid in the market, which is, of course, the form administered in disease, is the artificial variety. Some practitioners rely exclusively on salicin. Salicylates, as is well known, are liable to produce poisonous symptoms, such as headache, singing in the ears, and delirium; and the production to a certain degree of poisonous symptoms is by some considered almost essential in the effective treatment of acute rheumatism. However this may be, the poisonous symptoms produced were at one time considered to be due to the presence of carbolic acid, a probable impurity, since it is the substance from which salicylic acid is prepared. The carbolic acid theory is only a theory, and has long since been discarded. But there *is* a poisonous impurity in artificial salicylic acid, and it is with the investigation of this body that Dr. Charteris's paper dealt. It was observed that the poisonous doses in animals of the artificial and natural salicylic acid preparations differed greatly. Thus, 30 grains of salicin, 10 grains of *natural* salicylic acid, and 32 grains of *natural* salicylate of sodium had no poisonous effects on rabbits weighing two and a half pounds. On the other hand, such animals were killed by 10 grains of *artificial* salicylic acid and by 18 grains of *artificial* salicylate of sodium. This result is sufficiently remarkable, and indicated to Dr. Charteris the presence of an impurity in the artificial products. On further investigation, the impurity was found to be quite different in appearance to salicylic acid, being in appearance like coarse flour. It is very soluble in water, and is probably a derivative of creosotic acid. It is, however, a very poisonous substance, for 1 grain proved fatal to a rabbit weighing two pounds.

Dr. Charteris did not, however, rest content with identifying this poisonous impurity: he has devised a method for separating it from the commercial salicylic acid. The acid was combined with calcium, forming calcium salicylate, and salicylic acid set free from this calcium salt by adding hydrochloric acid. The acid is, of course, precipitated, and it is then purified by crystallizing it four

times from hot water. In this way a pure salicylic acid is obtained, which differs in no respect from the pure natural acid.

It may be considered by some an unimportant point to separate an impurity which exists in such small quantity. But a little consideration will show that the removal of this impurity would be of benefit. Salicylic acid, in the form of salicylate of sodium, is extensively employed in medicine for internal administration, and in such large quantity that it has to be prepared artificially from carbolic acid. It is, moreover, often given in some cases (rheumatic fever, for example) in large and repeated doses, 15 to 20 grains of salicylate of sodium every four hours,—*i.e.*, about ninety grains in the twenty-four hours. From Dr. Charteris's experiments, this amount of salicylate would contain about five grains of the poisonous impurity, an amount which cannot be considered as anything but harmful, since 1 grain is fatal to a medium-sized rabbit. It cannot be considered as serving any useful end that, besides the salicylate which we prescribe, the patient receives a poisonous body, the amount of which may, as far as we know, vary considerably; and, although severe toxic symptoms are not commonly noticed during the administration of the artificial salicylate of sodium, yet it seems reasonable to remove an impurity which *may* produce poisonous symptoms.

The result of Dr. Charteris's practical research ought, therefore, to be the purification of the artificial salicylic acid by the manufacturer, and various producers of salicylic acid have, we believe, fallen in with Dr. Charteris's views on the subject.

PARIS.

(From our Special Correspondent.)

The French Medical Association—The Value of Expert Work—Calomel Plasters for Syphilis—Sublimate in the Pitting of Small-Pox—A Deadly Bugle—Vaccinating with Steel Pens—Surgical Thinning of a Fat Man—Obituaries of Dr. Trélat and M. Péligot.

The "French Physicians' General Provident and Mutual Benevolent Association" (Association Générale de Prévoyance et de Secours Mutuels des Médecins de France) is now holding here an unusually important annual meeting. While much of the proceedings are of mere domestic concern, some points offer general interest. From the treasurer's report, for instance, it appears that the various funds aggregate the gratifying sum of five hundred and forty thousand dollars in round figures. The income last year from dues and initiation-fees was about twenty-seven thousand dollars, which corresponds to a membership of over ten thousand. The pension fund amounted to two hundred and sixty-eight thousand dollars, and the income was used for eighty-four life pensions at one hundred and twenty dollars and one at sixty dollars. From the usual income—dues and fines—seventy-four more pensions were served to disabled physicians or their families. Another feature of the meeting worthy of mention was the discussion of the new rates of compensation for expert medical work, to be presented to the Legislature as the wishes of the French medical body. It will probably be remembered that physicians have been for some time at loggerheads with lawyers about the ridiculous compensation allowed by an old law, and strictly adhered to by the judiciary. Finally, losing patience, the Rodez physicians—southerners, of course—struck, and refused to obey a judicial requisition in a now celebrated case. Before a justice of the peace their defence was a legal quibble, which did not save them from being sentenced to a nominal fine. Upon appealing to a higher court, on the same quibble, the judgment was reversed. And, finally, the case came up before the Cour de Cassation, the highest court in France, which last week, always on the quibble aforesaid, decided against the physicians and confirmed the original sentence. This was great fuss about a dollar and a quarter fine, which lawyers must have enjoyed all the more that the real point at issue never was mentioned. But in the mean time they had been set a-thinking that in many cases they cannot get along without the willing co-operation of expert physicians; that there are many ways to evade a law without violating it; and that it is proverbially hard to make a bird sing that will not sing. So overtures were made to the physicians by the Minister of Justice, requesting them to state their desires, which would be presented to the French Parliament now in session. After preliminary discussions the local societies passed various resolutions, which were submitted to the general association, with power to embody them into one bill, comprehending the desiderata of the profession. As the question was to come up at the present meeting, the number of delegates and members in attendance at the gathering was larger than it ever was before, even during the Exposition. The following is the

list of rates agreed to: For each visit, with written report, $2; examination with special instruments, $4, written report extra; post-mortem on a fœtus, $3; on an adult, $6; after exhumation, $10, operating and travelling expenses extra; also for each report and each three hours' sitting, $1.40 by day and $2 by night. The compensation named by French physicians is certainly quite reasonable. And, by the way, from a recent report it appears that in England, where prices are in general not very different from France, medical witnesses are allowed one guinea for attendance at a coroner's inquest, or two guineas for a post-mortem and attendance to give evidence as to the result thereof; their expenses are besides to be reimbursed. Another point, considered during the discussion, is a delicate one, and in reference to the fact that, according to the present law, any and every physician may be compelled to act as an expert whether he feels competent or not. "Magistrates," said Dr. Brouardel, "seem to take every doctor of medicine for a cyclopædia. But the physician who has not made special studies is aware that during the investigation he may be confronted with complications unfamiliar to him, wherein he feels himself liable to mislead justice. He knows also that after arduous work he will have before the public to face the defence, who will question his conclusions and try to discredit them. No wonder, then, if, feeling unequal to the ordeal, he would prefer declining to serve. No law should contain provisions contrary to the physician's conscience and the interest of justice." It is to be hoped French Parliament will find time enough to spare from politics to enact some equitable measure in place of an antiquated statute.

At the meeting of the Society of Dermatology and Syphiligraphy, which was held also in Paris a few days before the foregoing, Mr. Quinquaud recommended a new method of exhibiting mercurials, which he has found preferable to both the old mode and the more recent of hypodermic injections. He has obtained very good results with calomel plasters applied on the splenic region. The plastic mass is composed as follows:

Diachylon plaster, ℥lx;
Calomel, ℥xx;
Castor oil, ℥vi.

Mix, and make plasters four inches by four inches, or spread on cloth and divide into squares of the above size.

Before applying the plaster, wash the skin with soap and water, affix the medicament in the proper place, and leave it on for eight days. Then remove it, and cease treatment for eight days, after which apply another plaster for the same period, and so on. With hard-working patients the plaster is to be changed every four or five days. The absorption of mercury into the system can easily be watched in the following manner: Acidulate about a pint of the urine with muriatic acid, destroy the organic matter with potassium permanganate, and filter the liquid through a sharply-tapering funnel, so that it will fall drop by drop on a small copper-wire coil. Next introduce the coil into a test-tube kept slanting, and place a small particle of iodine a few centimetres above the metal. Upon heating, the presence of mercury will be manifested by the formation of a ring, yellow or red, according to the quantity. A yellow or pinkish-yellow color indicates mere traces. The investigation is not, as a rule, necessary in current practice, but it has enabled Dr. Quinquaud to follow up the mode and rate of absorption. It was found, from observations on some twenty patients, that mercury appears in the urine only four days after the plaster is on, and for three days the ring will be yellow, with a pinkish tinge, gradually deepening. After the seventh, and especially on the ninth and tenth days, the ring will be decidedly red. On suspending the treatment, after twelve days mercury was still found in the urine, and traces were yet apparent one month, and even six weeks, after the plaster's removal. The curative effects proved to be the same as usually obtained from mercurials in general, with the advantage that the stomatitis almost inseparable from stomachal administration was avoided; also that patients were saved the pain and accidents resulting from injections.

While on the subject of mercurials, mention should be made of a new way to use our old friend—mercuric chloride—for preventing the pitting of small pox. Dr. Talamon, at the Hospital Medical Society, has recommended the following procedure. The subjoined solution is first to be prepared:

Corrosive sublimate, gr. xv;
Citric acid, gr. xv;
Alcohol, 90°, ♏lxxv;
Ether, enough to complete, f℥xiiss.

The solution, which contains two per cent. by volume of sublimate, is to be applied with an atomizer, as follows: For the first or second day of the eruption, the face should

be washed with soap and water, rinsed with borated water, and wiped dry with absorbent cotton before the spray is used. But after the third day the washing is unnecessary. Now, the eyes being protected with borated wadding, the solution is applied with the atomizer, so as to give to the skin a slight frosty appearance, and yet avoid the danger of blistering through too copious a dose. For the whole face, the operation should barely last one minute. Of course, the spray is to be directed chiefly to such parts as are most affected with incipient pustules. And, lastly, after fifteen minutes, the face is to be rubbed with a pledget of wadding dipped in a glycerin solution of sublimate, half a drachm to the ounce. The operation is to be repeated three or four times every twenty-four hours during the first three days, and twice until the sixth or seventh day, when the spray may be discontinued, the glycerin painting being kept on until the scabs begin to drop off. The treatment has been found successful in nearly all cases (confluent small-pox, of course, excepted), and salivation never appeared, the diseased skin failing to let the metal through. Verily, as Dr. Ricord used to say, the golden age and the silver are long past; we live in the age of quicksilver.

Indeed, contagion is the modern physician's nightmare and antisepsy his hobby, both of which nags he loves to ride. Among the strange cases of contagion, the following is gravely related by a major in the French army: In a regiment several musicians were noticed to die of phthisis, one after the other. The major's attention having been called to the occurrence, an investigation was made, whence it appeared that, the instruments being the property of the state, the same bugle had passed in succession from one performer to the other, with apparently fatal results to all of them. Next in order was an examination of the bugle, where an experienced micrologist, called upon for the purpose, detected, back of the mouth-piece, a quantity of dried saliva, which, on being dissolved out with sterilized water, and tested microscopically and through cultures, proved to be full of tuberculosis bacilli. Although some may wonder how it is possible for a man to catch anything from an instrument generally needing pretty hard blowing, the two investigators were convinced that the bugle was the death of several men.

To avoid the danger of communicable diseases, another army surgeon, Dr. H. Maréchal has imagined an ingenious device, well adapted to the use of practitioners having numerous vaccinations to perform. Considering the difficulty of rapidly insuring the cleanliness of a lancet, he has hit upon the idea of having a new instrument for each patient, and for the purpose has found steel pens cheapest and most convenient. He recommends the unfinished steel pen,—that is, the form before the slit has been cut in, which, in this country, can be purchased from manufacturers at about seven cents a hundred. All that is necessary is to sharpen one side on a grindstone. The work can be done in a very short time, and thus each patient may be vaccinated with an instrument which, having been used on no one else, will be sure to impart no contagion. Of course, bovine virus alone will do, else all precautions would be vain.

Always, thanks to antisepsy, surgeons nowadays will undertake the boldest sorts of operations, and encroach more and more on the domain of therapeutics. Last month, for instance, Drs. Demars and Marx successfully began the surgical treatment of a patient affected with obesity. In good justice it should be said all the drugs had been tried in vain, and the man had such an accumulation of fat over his abdomen that it formed a fold, hanging down and covering his thighs like an apron. Not only was walking greatly impeded, but painful erythema and intertrigo had developed to a dangerous extent. Our surgeons decided upon a radical treatment. They made on the abdomen two horizontal incisions, one over the pubis and the other two inches below the navel; the two incisions were about nineteen inches long and six inches apart near the median line, and met at an acute angle on either of the patient's sides. The operators thus removed, adhering to the skin, a strip of fatty tissue, nearly five inches thick, weighing four pounds and a half. The operation having been made under strict antiseptic conditions, the wound healed up by the first intention without suppurating, although there were thirty-five suture points, and the patient was three weeks later attending to his usual business. Even a second dressing of the wound never was necessary. The man has experienced so much relief that he wishes to have another operation undertaken, which this time is to be on either side of the umbilicus.

Two noted scientists have died this month,—namely, Dr. Trélat, of the Academy of Medicine, and M. Péligot, of the Academy

of Sciences. M. Trélat, Ulysse, was born in Paris in 1828, and graduated in 1854. He became a fellow of the faculty in 1860, with a thesis on phosphorus necrosis. After being in succession physician to the Maternité, Saint-Antoine, Pitié, and Charité Hospitals, he was, in 1872, appointed a professor of surgical pathology at the Paris faculty, and in 1874 elected a member of the Academy of Medicine. Many memoirs of his have appeared in medical periodicals, also articles in dictionaries and cyclopædias, on most varied subjects, but he leaves no important work. He was an exceedingly skilful operating surgeon, unerring in diagnosis, and speedy in performance. His forte, however, was lecturing and debating. In those lengthy discussions common to medical—and other—societies he would let all speak out, and when every one was tired, and things were inextricably mixed up, he would rise, in a few clear sentences recapitulate the arguments on either side, and present his own conclusions, which were always accepted unanimously.

Péligot, Eugene-Melchior, was born in Paris in 1811. He graduated in 1829 from the Central School of Arts and Manufactures, and soon became the celebrated chemist Dumas's help and co-laborer. He was appointed in 1837 a professor of chemistry at the same Central School, in 1846 professor of industrial chemistry at the Arts-et-Métiers Conservatory, and in 1880 chemical director of the Paris Mint. In 1852 he was elected a member of the Academy of Sciences. He has published important treatises on analytical chemistry, also on glass-making, and in 1847 discovered the metal uranium, now used so extensively for coloring glass. Near the beginning of this year he resigned his position at the conservatory, and was succeeded by Professor Jungfleisch, of the College of Pharmacy. Let this abnegation be mentioned to his praise, as the celebrated saying, "They seldom die, and never resign," is a maxim applying to others than politicians.

PARIS, April 18, 1890.

BERLIN.

(From our Special Correspondent.)

Eight days ago yesterday we were at Professor Leyden's, whose house was resplendent with flowers and costly presents. Our object was to present him with a bust, modelled by Schaper, a gift from the former pupils, colleagues, and other admirers, in honor of the twenty-fifth anniversary jubilee of his professorship.

The post of honor was given to Nothnagel, the oldest friend of Leyden, who spoke in eloquent language on making the presentation. Great was the number of speeches that followed from the representatives of the various societies that took part in the jubilee.

In a specially humorous manner Leyden thanked the representative of the temperance society by telling him he had himself always been a follower of their principles "theoretically." Two days later the Society of Clinical Medicine gave a splendid banquet of two hundred covers in honor of the distinguished professor.

This is not the place to treat of Leyden's labors in endeavoring to raise the standard of medical science. His successful investigations in the various branches of medicine are renowned.

Leyden worked especially towards promoting the development of medicine in Germany through the founding of the Society and of the Congress of Medicine, which is recognized as part of his work, and which has contributed enormously in effecting the personal intercourse among the co-laborers in great works and problems of present day science.

The works of these two corporations rank among the very first in the field of medicine.

The Medical Congress begins its sittings to-morrow in Vienna. The great number of themes which the daily bills present leads one to expect full debate and discussion.

Another Congress closed its sittings yesterday,—the Nineteenth Congress of the German Society of Surgery.

The opening of the Congress, for whose foundation we have to thank Bernard von Langenbeck as its starter, was effected in a worthy manner by Professor von Bergmann, who occupied the chair at the time. He remembered in becoming words the protectoress of the Society, the deceased Empress Augusta, and he then gave a fitting testimonial of thanks for the lasting services rendered by Richard von Volkmann. The purchase of the site of the Langenbeck House was made by the Society. Almost at the moment of the conclusion of this transaction came a despatch from his majesty the emperor stating that he contributed one hundred thousand marks for the Langenbeck House enterprise. The time is not far distant when the German Surgical Society will have a worthy home to hold its meetings. In regard to the business pro-

ceedings, it is to be mentioned that Professor Ollier (Lyons) was chosen honorary member of the Society, for the current year Professor Thiersch (Leipsic) has been chosen to preside at its first sittings, and that Professor von Bergmann believes he will take a leave of absence for the months of March and April, 1891, when the Society shall enter upon its new year.

The scientific questions touched by the Society met with so much contradiction that the most important deserve but a short mention here. Kappeler (Stansterlingen) spoke in regard to narcotization. For the exhibition of chloroform and air, which secures safe narcotization, he uses an apparatus in which the air does not pass through the chloroform but strikes across its surface. By this apparatus very much less chloroform is used than by others, and it has also proved itself highly successful in numerous operations. Kappeler declared himself against ether narcosis, as with his apparatus the amount of chloroform given can be perfectly regulated, and death by chloroform can be prevented better than formerly. All deaths under chloroform cannot be avoided by this apparatus, as many of these should not be attributed to chloroform, but to shock from trauma, hemorrhage, etc.

Professor Bruns was inclined towards ether, since this affected the pulse but slightly, whereas the bad influence of chloroform, upon the circulation is well known.

Dr. Thiem (Kottbus) gave his experience in trials with bromethyl. The drug, in the main, produced a bromethyl hypnotism, in which it was possible to carry out small operations, as the condition only lasted fifteen minutes, and then returned to the normal again. It had, moreover, the power of producing absolute narcotization in certain people, which, however, was attended with more severe sequelæ, and its use in this direction, therefore, is to be wholly disapproved.

Remarkable are the results obtained by many surgeons with iodoform injections in a ten per cent. oil emulsion, or in the form of a mixture with water, in cases of tuberculous joints. A trocar is introduced into the diseased joint, through which it is completely cleansed of its contents, and then the iodoform mixture is thrown in. The injection is given every eight days. Krause (Halle), after removing the discharges from the joint, washes it out with a boracic acid solution, and then fills it full with iodoform-water. He further recommends motion and massage.

Trendelburg has also had experience with the same application in cases of tuberculous pleurisy, and he has tried it in phthisis. In the latter case the lower lobe was the seat of the affection. The injection was well borne here, but we cannot tell of the result yet, as it is of too recent a date. Further trials in this direction may well be given. The results obtained by the above-mentioned method of treating tuberculous joints certainly gave much satisfaction, as the patients exhibited proved. The function was almost completely recovered; not only did the joints and extremities heal up, but the cure effected was lasting (observations were kept as long as two years).

With regard to resection and recreation of the liver, Professor Ponfick shared the following opinion with Dr. Eingriff, that the secretory function of the liver was of less importance than was its circulation. Experiments on animals show that three-fourths of the organ can be removed (one-fourth every three to four days) without the animals being visibly affected. After the animal has been killed, it is found that the liver has not only replaced the piece that had been removed, but the new part is of much greater magnitude than the old. A recreation of liver-tissue to the extent of one hundred and twelve per cent. occurs, when one wishes to compute it with the normal at one hundred per cent. The more radical the attack the faster does the recreation proceed. In five days perhaps eighty per cent. would be replaced.

Electro-puncture presented good results in the treatment of aneurisms. Tillmanns (Leipsic) told of a cure in a case of aneurism of the ascending aorta. The anode, as a small, fine needle without insulation, was introduced to the extent of five centimetres; the cathode, as a plate, placed upon the skin in the neighborhood of the tumor. At first ten, later twenty, cells were used. The intercalated stream of moisture received the current and swellings, so that the operation was painless. Strict antiseptic sittings lasted five to ten minutes. The aneurismal sack contracted, the pulsation became weaker. In another case, treated in the same way, which terminated fatally from internal hemorrhage, the aneurism showed very many thrombi formed. The method, then, is fitted to relieve the conditions; scarcely to the extent of affecting a cure.

In the cases of tuberculous kidneys, according to Madelung (Rostock), not only is nephrectomy admissible, but it is absolutely

indicated, when the cases are well marked and are taken at the proper time.

Perityphlitis, which formerly belonged to medicine in its treatment, should certainly, as it appears, be given over to the province of surgery. When more authority is forthcoming the affection will certainly be treated surgically.

If the symptoms persist under the ordinary medical treatment for a few days, if the tumor, pain, etc., do not subside, then is the incision of the abscess imperative.

Perityphlitis does not always present the symptoms of perforation of a fæcal calculus, but resembles an inflammation of the ileocæcal connective tissue, for which an incision is strenuously demanded.

In the case of chronic recurring perityphlitis, the resection of the vermiform process is recommended.

Also in many diseases of the central nervous system surgical treatment shows itself to have a good outlook.

More cases at the Congress presented this view. The one, a boy, aged 5, had received a blow upon the head that jammed the skull together and caused a hemorrhage, with an outflow of small particles of brain substance. Sawing out a piece of bone, six and a half centimetres long by four centimetres wide, covering over the defects by skin, reduced the great anæmia and aphasia that were present before the operation (the patient had not been able to make himself understood, owing to the shaking and nodding of his head).

A second patient had received a blow from a beer-glass on the left side of his skull. After suturing the wound, a small fistula still remained, without any other abnormal symptoms, until six weeks after the injury epileptic attacks began. Upon widening the fistula, a brain abscess was discovered, four or five teaspoonfuls of pus was removed, and, after closing it up, cure was rapidly effected. The patient was free three months after the injury.

In cases of spinal paralysis, Kraspe (Freiburg) recommends the trepanning of the vertebral canal as not only legitimate but as being strictly demanded whenever the primary tubercular focus is situated in the arches of the vertebræ, and the pathogenic mass (tubercular) has worked its way out into the extra-dural portion of the canal. If the process has extended beyond the bodies of the vertebræ, operation is only indicated by extreme pallor, since in such cases there is not much more to lose. Otherwise one must desist from operating, since by removing the arch, you rob the vertebral body of its last support. One must try other means at first of curing the paralysis before venturing on an operation.

The following four addresses and communications were of great interest:

Kronlein (Zurich) delivered an address on myomatomy, with support to the uterine ligaments (which has never before been written of as a successful method of treatment), where, after the operation, conception and gestation occurred in a normal manner.

Schröder had proposed to support the tubes and ovaries in this operation. Formerly there was no case of this kind known in which gestation ran a successful course.

Kronlein performed the operation in a successful manner on a 25-year-old married woman. The mother gave birth to a healthy child after normal gestation.

König (Göttingen) spoke of resection of the intestines in cases of tumors and other diseases of the intestines that lead to stenosis. The diagnosis is often difficult, even impossible to make. It is not always possible to distinguish between an ulcer of the intestines and one of the pylorus. The symptoms of incarceration are not always apparent at first, as sometimes there is no fæcal arrest. Hemorrhage is of great importance. Whenever the tumor is recognized, it is to be removed. The line of incision is not always in the middle, but must be where the tumor can be most readily reached.

Mikulicz (Königsberg) has been trying experiments that are worth printing. He endeavored to find how great a portion of the whole mass of blood is lost on the operating-table. Blood can be measured by counting the corpuscles, or, better, by measuring the amount of hæmoglobin. One must then know how long it takes for the blood to be renewed, and what influence age, sex, constitutional disease (tumors) have on it. The average was taken from a number of counts. Men have the largest amount of hæmoglobin, children the smallest. Blood is regenerated by young men the quickest, most slowly by old women. Five days is necessary to regenerate five per cent. of hæmoglobin, in which age and sex also play a *rôle*. In the case of subcutaneous hemorrhage, the regeneration occurs no later. A loss of blood when the hæmoglobin sank below twenty per cent. produced death by collapse. By a knowledge of these figures one may approximately judge

if a man is in condition for an operation. Chloroform, however, undoubtedly lessens the hæmoglobin, which is, perhaps, a matter of importance in the question of narcotization (ether?). In the case of tubercular patients, the blood was completely regenerated. Only in ten cases did it fail in this, and here the disease had not been removed. Malignant tumors give the same results. Here we may have important clues to operation.

Gluck (Berlin) spoke of the positive results he had obtained by sutures and plastic work on connective tissue, and of the absorbable and living tampons for surgical purposes. He uses catgut for tendons and nerves, ivory-pegs for bones; as absorbable tampons, catgut, silk, decalcified bone; as living tampons, pieces of sponge, lipomata, fresh coagula from animals.

Notes and Queries.

THE TENTH INTERNATIONAL MEDICAL CONGRESS.

We have received the following invitation to the Tenth International Medical Congress, with the request to lay it before our readers, assuring them that they will receive a hearty welcome in Berlin. The Congress promises to prove of inestimable value in its educational results and in securing the ties of international professional brotherhood.

It is most important that the American profession should participate both in its labors and in its fruits. Delegates of American medical societies and institutions and individual members of the profession will be admitted on equal terms. The Committee of Organization have appointed the following gentlemen as members of an American committee, for the purpose of enlisting the sympathy and co operation of the American profession:

S. C. Busey, Washington, D. C.; Wm. H. Draper, New York; R. H. Fitz, Boston, Mass.; H. Hun, Albany, N. Y.; A. Jacobi, New York; Wm. T. Lusk, New York; Wm. Osler, Boston, Mass.; Wm. Pepper, Philadelphia, Pa.; J. Peyre Porcher, Charleston, S. C.; J. Stewart, Montreal, Canada.

INVITATION TO THE TENTH INTERNATIONAL MEDICAL CONGRESS.

In accordance with the decision of the Ninth Congress at Washington, the Tenth International Medical Congress will be held at Berlin from the 4th to the 9th of August, 1890.

By the delegates of the German medical faculties and the chief medical societies of the German empire, the undersigned have been appointed members of the General Committee on Organization. A special committee on organization has also been appointed for each of the different sections, to arrange the scientific problems to be discussed at the meetings of the respective sections. An International Medical and Scientific Exhibition will also be held by the Congress.

We have the honor to inform you of the above decisions, and at the same time to cordially invite your attendance at the Congress. We should esteem it a favor if you would kindly extend this invitation to your friends in medical circles, as may offer.

We beg to accompany our invitation by a copy of the statutes and programme, as also a list of the intended sections and their special committees on organization.

Dr. Rudolf Virchow, *President;* Dr. von Bergmann, Dr. Leyden, Dr. Waldeyer, *Vice-Presidents;* Dr. Lassar, *General Secretary.*

All communications must be directed to the General Secretary, Berlin N. W., Karlstrasse 19.

REGULATIONS AND PROGRAMME.

I. The Tenth International Medical Congress will be opened in Berlin on Monday, August 4, 1890, and will be closed on Saturday, August 9.

II. The Congress shall consist of legally qualified medical men who have inscribed themselves as members and have paid for their card of membership. Other men of science who interest themselves in the work of the Congress may be admitted as extraordinary members.

Those who take part in the Congress shall pay a subscription of 20 marks (£1 or $5) on being enrolled as members. For this sum they shall receive a copy of the *Transactions* as soon as they appear. The enrolment shall take place at the beginning of the Congress. Gentlemen may, however, be enrolled as members by sending the amount of the subscription to the Treasurer* with their name, professional status, and residence appended.

III. The object of the Congress is an exclusively scientific one.

* Treasurer's address: Dr. M. Bartels, Berlin S. W., Leipzigerstrasse 75. Please enclose a visiting-card.

IV. The work of the Congress will be discharged by eighteen different Sections. The members shall declare upon enrolment to which Section or Sections they intend more particularly to attach themselves.

V. The Committee on Organization shall, at the opening sitting of the Congress, suggest the election of a definite committee (or bureau), which shall consist of a president, three vice-presidents, and of a number (as yet undetermined) of honorary presidents and secretaries.

At the first meeting of each Section a president and a certain number of honorary presidents shall be elected ; these latter shall conduct the business of the Sections in turn with the presidents.

On account of the different languages employed, a suitable number of secretaries shall be chosen from among the foreign members. The duties of the foreign secretaries shall be confined to the meetings of the Congress.

After the termination of the Congress the editing of the *Transactions* shall be carried out by a committee especially appointed for this purpose.

VI. The Congress will assemble daily, either for a general meeting or for the labors of the different Sections.

The general meetings will be held between eleven and two o'clock. Three such meetings will take place.

The time for the meetings of the various Sections will be fixed by the special committee of each Section, it being understood, however, that no such meetings are to take place during the hours allotted to the general meetings.

Joint meetings of two or more Sections may be held, provided that the Bureau of the Congress can offer suitable rooms for such meetings.

VII. The general meetings shall be devoted to (*a*) transactions connected with the work and general management of the Congress ; (*b*) addresses and communications of general interest.

VIII. Addresses in the general meetings, as well as in any extraordinary meetings which may be determined upon, can only be given by those who have been especially requested by the Committee on Organization.

IX. In the meetings of the Sections, questions and problems will be discussed which have been agreed upon by the special committees on organization. The communications of those appointed by the committee to report on a subject shall form the basis of discussion. As far as time allows, other communications or proposals, proceeding from members and sanctioned by the Committee on Organization, may also be introduced for discussion. The bureau of each Section decides as to the acceptance of such offered communications, and as to the order in which they shall come before the meeting, always provided that this point has not been already determined in the meeting itself by a decree of the Section.

Scientific questions shall not be put to a vote.

X. Introductory addresses in the Sections must, as a rule, not exceed *twenty minutes in length*. In the discussions no more than *ten minutes* are allowed to each speaker.

XI. All addresses and papers in the general and sectional meetings must be handed over to the secretaries in writing before the end of the meeting. The Editorial Committee shall decide whether—and to what extent—these written contributions shall be included in the printed *Transactions of the Congress*. The members who have taken part in the discussions will be requested to hand over to the secretaries, before the end of the day, in writing, the substance of their remarks.

XII. The official languages of all the meetings shall be German, English, and French. The regulations, the programme, and the addenda for the day will be printed in all three languages.

It will, however, be allowable to make use of other languages than the above for brief remarks, always provided that one of the members present is ready to translate such remarks into one of the official languages.

XIII. The acting president shall conduct the business of each meeting according to the parliamentary rules generally accepted in deliberative assemblies.

XIV. Medical students and other persons, ladies and gentlemen who are not physicians, but who take a special interest in the work of a particular meeting, may be invited by the President or be allowed to attend the meeting by special permission.

XV. Communications or inquiries regarding the business of separate Sections must be addressed to the managing members thereof. All other communications and inquiries must be directed to the General Secretary, Dr. Lassar, Berlin N. W., 19 Karl Strasse.

SPECIAL SECTIONS.—COMMITTEES ON ORGANIZATION.

(The names which appear in *italics* are those of the managing members.)

1. *Anatomy.*—Flemming, Kiel; Hasse, Breslau; *Hertwig*, Berlin W., Maassen Strasse, 34; His, Leipsic; Von Kölliker, Würzburg; Kupffer, München; Merkel, Göttingen; Schwalbe, Strassburg; Wiedersheim, Freiburg.

2. *Physiology and Physiological Chemistry.*—Bernstein, Halle; Biedermann, Jena; *Du Bois-Reymond*, Berlin W., Neue Wilhelm Strasse, 15; Heidenhain, Breslau; Hensen, Kiel; Hüfner, Tübingen; Hoppe-Seyler, Strassburg; H. Munk, Berlin; Voit, München.

3. *General Pathology and Pathological Anatomy.*—Arnold, Heidelberg; Bollinger, München; Grawitz, Greifswald; Heller, Kiel; Ponfick, Breslau; Von Recklinghausen, Strassburg; *Virchow*, Berlin W., Schelling Strasse, 10; Weigert, Frankfort-on-the-Main; Zenker, Erlangen.

4. *Pharmacology.*—Binz, Bonn; Böhm, Leipsic; Filehne, Breslau; Jaffé, Königsberg; *Liebreich*, Berlin N. W., Dorotheen Strasse, 34 a; Marmé, Göttingen; Penzoldt, Erlangen; Schmiedeberg, Strassburg; Hugo Schulz, Greifswald.

5. *Internal Medicine.*—Biermer, Breslau; Gerhardt, Berlin; Leube, Würzburg; *Leyden*, Berlin W., Thiergarten Strasse, 14; Lichtheim, Königsberg; Liebermeister, Tübingen; Mosler, Greifswald: Naunyn, Strassburg; Von Ziemssen, München.

6. *Diseases of Children.*—Baginsky, Berlin; *Henoch*, Berlin W., Bellevue Strasse, 8; Heubner, Leipsic; Kohts, Strassburg; Krabler, Greifswald; Ranke, München; Rehn, Frankfort-on-the-Main; Soltmann, Breslau; Steffen, Stettin.

7. *Surgery.*—Bardeleben, Berlin; *Von Bergmann*, Berlin N. W., Alexander Ufer, 1; Czerny, Heidelberg; König, Göttingen; Von Lotzbeck, München; Schede, Hamburg; C. Thiersch, Leipsic; Trendelenburg, Bonn; Wagner, Königshütte.

8. *Obstetrics and Gynæcology.*—Fritsch, Breslau; Gusserow, Berlin; Hegar, Freiburg; Hofmeyer, Würzburg; Kaltenbach, Halle; Löhlein, Giessen; *Martin*, Berlin N. W., Moltke Strasse, 2; Olshausen, Berlin; Winckel, München.

9. *Neuralgia and Psychiatry.*—Binswanger, Jena; Emminghaus, Freiburg; Erb, Heidelberg; Flechsig, Leipsic; Fürstner, Heidelberg; Grashey, München; Hitzig, Halle; Jolly, Strassburg; *Laehr*, Berlin-Zehlendorf.

10. *Ophthalmology.*—O. Becker, Heidelberg; Eversbuch, Erlangen; Von Hippel, Giessen; Hirschberg, Berlin; Leber, Göttingen; Michel, Würzburg; Schmidt-Rimpler, Marburg; *Schweigger*, Berlin N. W., Roon Strasse, 6; Von Zehender, Rostock.

11. *Otology.*—Bezold, München; Bürkner, Göttingen; Kirchner, Würzburg; Kuhn, Strassburg; Kessel, Jena; *Lucae*, Berlin W., Lützowplatz, 9; Magnus, Königsberg; Moos, Heidelberg; Trautmann, Berlin.

12. *Laryngology and Rhinology.*—Beschorner, Dresden; *B. Fraenkel*, Berlin N. W., Neustädtische Kirch Strasse, 12; Gottstein, Breslau; A. Hartmann, Berlin; Jurasz, Heidelberg; H. Krause, Berlin; Michael, Hamburg; Schech, München; M. Schmidt, Frankfort-on-the-Main.

13. *Dermatology and Syphiligraphy.*—Caspary, Königsberg; Doutrelepont, Bonn; Köbner, Berlin; *Lassar*, Berlin N. W., Carl Strasse, 19; Lesser, Leipsic; G. Lewin, Berlin; Neisser, Breslau; Unna, Hamburg; Wolff, Strassburg.

14. *Diseases of the Teeth.*—*Busch*, Berlin N. W., Alexander Ufer, 6; Calais, Hamburg; Hesse, Leipsic; Fricke, Kiel; Holländer, Halle; Miller, Berlin; Partsch, Breslau; Sauer, Berlin; Weil, München.

15. *Hygiene.*—Flügge, Breslau; Gaffky, Giessen; Graf, Elberfeld; F. Hofmann, Leipsic; R. Koch, Berlin; Lehmann, Würzburg; *Pistor*, Berlin W., Von der Heydt Strasse, 13; Wolffhügel, Göttingen; Uffelmann, Rostock.

16. *Medical Geography and Climatology (History and Statistics).*—Abel, Stettin; Brock, Berlin; Dettweiler, Falkenstein; Falkenstein, Lichterfelde; Finkelnburg, Bonn; Guttstadt, Berlin; *A. Hirsch*, Berlin W., Potsdamer Strasse, 113; Lent, Köln; Wernich, Cöslin.

17. *State Medicine.*—Falk, Berlin; Günther, Dresden; Von Hölder, Stuttgart; Knauff, Heidelberg; *Liman*, Berlin S. W., Königgrätzer Strasse, 46 a; Schönfeld, Berlin; Schwars, Köln; Skrzecka, Berlin; Ungar, Bonn.

18. *Military Hygiene.*—Von Coler, Berlin; Von Fichte, Stuttgart; Grasnick, Berlin; Grossheim, Berlin; *Krocker*, Berlin W., Magdeburger Platz, 3; Mehlhausen, Berlin; Mohr, München; Roth, Dresden; Wenzel, Berlin.

THE HYPNOTIC EFFECT OF WARM BANDAGES.

Warm baths, as is well known, produce a calming effect, and tend to produce sleep, and ALLDORFER has attempted to apply such a method in patients where a sedative effect is desired and yet where a bath is inapplicable. His method consists in wrapping the lumbar region and belly with linen cloths soaked in warm water, and then covering them with oiled silk or rubber-cloth, so as to prevent evaporation, while the whole is kept in place and loss of heat prevented by a flannel cloth.

This procedure is of ready performance, and the author says that by this simple means he has obtained the most astonishing results in the treatment of insomnia.—*Journal de Mèdecine de Paris*, March 9, 1890.

FATAL PODOPHYLLIN-POISONING.

In the *Medical Record* for April 12, 1890, DR. W. H. DUDLEY reports that he was recently called in the middle of the night to see a lady, aged 60, and found her in the following condition: Face, feet, and hands quite cool; cold perspiration standing on face; pulse 60, quite weak and thready; respirations sighing, and speaks with difficulty. Says she took some mandrake the evening before, and soon afterwards (about 10 P.M.) commenced vomiting and purging, which continued to the present. Both vomited matter and stools contained bile. Two hours later the vomiting and purging had ceased, the pulse rose to 70 per minute, the hands and feet getting warm, respirations were natural, and the patient expressed herself as being comparatively comfortable. About seven o'clock in the morning the patient felt so far recovered that she arose and dressed, but soon lay down, feeling quite depressed. Her mind now showed aberration and memory of past events defective. Seen at 3 P.M.: primary symptoms of depression returned, but no purging or vomiting.

At 9 P.M. of the same day (about twenty-four hours after taking the podophyllin) the patient was comatose; pulse, 100 to the minute, full, soft, and compressible; temperature, 100 + ° F.; pupils slightly contracted; respiration, 38. The hand applied to the surface would suggest a higher temperature than is shown by the thermometer.

From this time till 4 A.M. of the morning of the 14th there was a gradual decline. Occasionally she would arouse sufficiently to take food and remedies, but was for the most part comatose. The urine had to be drawn, and was found to be smoky in color; specific gravity, 1.020, acid; albumen, one-eighth volume after standing; microscope showed large quantities of blood-cells, but no casts were discovered. In this case there was an error in the patient's dose. She supposed she was taking mandrake, while she took its resinoid,—podophyllin. The quantity taken, as shown by the patient before her mind became clouded, was found to weigh about five grains. In this case the treatment consisted of, at first, morphine, ⅛ grain, followed by small quantities of whiskey; later, of food and stimulants, as it was possible to exhibit them.

The primary symptoms of poisoning were removed rather promptly when the condition of the patient promised recovery, but those developing later showed an unrecorded secondary action, which would suggest that the liver had been stimulated to the production of a large amount of cholic, choleic, taurocholic, or glycocholic acid, the effect of which was to bring about a condition similar to that of cholæmia, minus the jaundice, a symptom absent throughout the duration of the illness,—about eighty hours. No post-mortem was obtained. It should be stated that the husband of the patient took a similar dose of the same drug, and suffered primarily in about the same manner as his wife, though in a minor degree, which was followed by a depressed condition for two or three weeks; but he finally recovered, and has since enjoyed his usual health.

DRAINAGE OF THE PERITONEUM.

DR. DELBET discusses this subject at great length in the *Annales de Gynécologie* for February. He compares drainage by means of large tubes with capillary drainage, effected by iodoform gauze or some similar agent. As the result of clinical and anatomical experience, he concludes that capillary drainage alone can insure the escape of liquids secreted during the first hours after operation. All forms of drain, tubes, or gauze alike become rapidly surrounded by adhesions, and thus, as in the case of *tamponnement*, they may cause a dangerous focus of infection to become practically extraperitoneal. To that result he believes the efficacy of drainage to be principally due. The capillary drainage

of Mikulicz is effected by packing Douglas's pouch with iodoform gauze. That authority specially recommends his method in cases where a large cavity is left, at the lower part of the abdominal wound, not to be closed by sutures. The gauze, he believes, acts as a hæmostatic plug, prevents the entry of septic germs, drains most efficaciously by capillary attraction, and, by promoting adhesions in the surrounding structures, cuts off the cavity from the rest of the peritoneum. M. Pozzi combines the two methods of drainage. He packs the cavity with the gauze, in the centre of which a drainage-tube is inserted, and prevents the retention of liquid too thick to filter through the gauze. Dr. Delbet finds that by drainage with a glass tube very little fluid can be evacuated even by aspiration by means of a syringe. If a litre of water be poured into Douglas's pouch into which a glass drainage-tube of the usual form is inserted, hardly a drop of water can be removed by means of a rubber tube attached to a glass syringe and introduced into the glass drain. In fact, according to this experiment, drainage, after the manner practised and advocated by so many well known British operators, is useless. Yet the system of Mikulicz is little practised in the United Kingdom, while results prove that glass tube drainage is admirably efficacious. However aspiration by tube and syringe may fail in experiments, it succeeds in removing ounces of fluid after operations. —*British Medical Journal*, March 22, 1890.

THE VALUE OF TRICHLORACETIC ACID AS A TEST FOR ALBUMEN IN THE URINE.

The practical value of trichloracetic acid as a test for albumen in urine has been further investigated by Dr. D. M. Reese (*Johns Hopkins Hospital Bulletin*, No. 3), since the publication of a note on the subject last November. Dr. Reese fully confirms the statement that trichloracetic acid precipitates not only the albumen ordinarily found in urine, but also an albumen occasionally present, which is dissolved by acetic acid. In fourteen out of eighty-seven different specimens of urine he obtained a precipitate with trichloracetic acid, and not with nitric or picric acids, or heat and acetic acid. What gives his paper special interest is that in eleven of these fourteen cases granular, epithelial, or hyaline casts were found, and in three of these eleven cases the necropsy showed distinct changes in the kidneys. He concludes that trichloracetic acid is a most delicate test for albumen in urine, prompt in action, easily applied, and worthy of extended use.

WESTERN PENNSYLVANIA MEDICAL COLLEGE.

The fourth annual commencement exercises of the Western Pennsylvania Medical College were held in the Grand Opera House, Pittsburg, on March 27; the degree of M.D. was conferred on twenty-nine graduates, being about twenty-five per cent. of the class in attendance during the past term.

In the evening of the same day the Alumni Association of the college, now numbering one hundred and twenty, was entertained by the faculty at a banquet provided at the Seventh Avenue Hotel.

OPERATIONS ON THE PROSTATE GLAND.

Dr. Wm. T. Belfield, 612 Opera House Building, Chicago, Ill., U. S. A., solicits information concerning unpublished cases of operations upon the prostate, especially for the relief of the so-called hypertrophy of the organ.

The information is desired to cover the following points:

Date; age of patient; previous use of catheter; complications (stone, etc.); nature of operation; immediate result; subsequent history; operator (reporter).

The operations about which information is requested are:

1. Suprapubic prostatectomy.
2. Perineal prostatotomy.
3. Mercier's or Bottini's operation.
4. Incidental removal of portions of prostate in operations for stone, etc.
5. Institution of artificial urinary channel in cases of prostatic obstruction.
6. Operations for malignant or tubercular disease of prostate or bladder.
7. Operations on seminal vesicles.
8. If suprapubic operation, whether bladder wound was left open or sutured; whether special incision for drainage was made; to what extent bladder was distended or distensible; whether rectal bag was used; whether peritoneum was injured.

The source of information will, of course, in every instance be printed.

THE WILLIAM F. JENKS MEMORIAL PRIZE.

The second triennial prize, of four hundred and fifty dollars, under the deed of trust of Mrs. William F. Jenks, will be awarded to the author of the best essay on "The Symptomatology and Treatment of the Nervous Disorders following the Acute Infectious Diseases of Infancy and Childhood."

The conditions annexed by the founder of this prize are, that the "prize or award must always be for some subject connected with obstetrics, or the diseases of women, or the diseases of children;" and that "the trustees, under this deed for the time being, can, in their discretion, publish the successful essay, or any paper written upon any subject for which they may offer a reward, provided the income in their hands may, in their judgment, be sufficient for that purpose, and the essay or paper be considered by them worthy of publication. If published, the distribution of said essay shall be entirely under the control of said trustees. In case they do not publish the said essay or paper, it shall be the property of the College of Physicians of Philadelphia."

The prize is open for competition to the whole world, but the essay must be the production of a single person.

The essay, which must be written in the English language, or, if in a foreign language, accompanied by an English translation, should be sent to the College of Physicians of Philadelphia, Pa., U. S. A., before January 1, 1892, addressed to Louis Starr, M.D., chairman of the William F. Jenks Prize Committee.

Each essay must be distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, and containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The committee reserves the right not to make an award if no essay submitted is considered worthy of the prize.

THE DANGERS OF CANNABIS INDICA.

The therapeutical effects of Indian hemp are often very valuable, but the drug has fallen into disfavor on account of the inequality of its action. Doses which, on one occasion, are well borne, and afford considerable relief, at other times give rise to symptoms of poisoning, and practitioners naturally hesitate to make use of a drug which, however valuable when they happen to hit the mark, may get them into trouble. It seems that this apparent waywardness is due to the fact that the active principles vary in different specimens of the plant from year to year, so that the actual degree of potency is always somewhat uncertain. Comparatively little is known of the chemical nature of these active principles, and their examination opens up a wide field for research. In the mean time the valuable sedative properties of the drug may be obtained without danger of overstepping the limit by employing only small doses to begin with. As soon as the strength of the preparation and the susceptibility of the patient have been measured in this way, the dose can be rapidly and successively increased until the desired effect is produced.—*Medical Press and Circular*, April 16, 1890.

BEHAVIOR OF THE PUPILS IN EPILEPTICS.

M. CHARPENTIER (*Revue Générale de Clinique et de Thérapeutique*, No. 6) directs attention to what he considers to be a peculiarity in the behavior of the pupils among epileptics. Inequality of the pupils may be no sign of disease, other than perhaps some variation in the refractive media of the eye, but it is also a common indication of general paralysis, of the post-epileptic state, or associated often with facial neuralgia and migraine, and with affections involving the sympathetic. But in all these instances the inequality is more or less permanent. The condition he desires to note is a rapid, transient, and variable difference in the size of the two pupils, somewhat resembling the temporary inequality produced by closing one eye for a short time and then suddenly opening it. The phenomenon is produced sometimes at very short intervals in the same subject; it is unconnected with any fit or vertigo, or other symptom of epilepsy, and it has no prodromal significance; but it would appear to be liable to be evoked in any epileptic when he is under the influence of emotion, especially if he has a difficulty in expressing himself. M. Charpentier has not seen it occur apart from emotional disturbance and effort, and so far has only noticed it to be a dilatation of

the pupil, progressively increasing or alternately dilating and contracting. He thinks that if these observations are confirmed by others, the sign may be of value as revealing the existence of the epileptic neurosis.—*Lancet*, February 15, 1890.

BROMIDE OF GOLD IN EPILEPSY.

Following up the observations of Bourneville, Dauge, and Goubert, on the treatment of epilepsy by bromide of gold, several Russian physicians have made trial of this drug in various affections of the nervous system. Professor Merzheëvski, having a very obstinate case of hysteria, which had resisted all the usual remedies, prescribed bromide of gold in ¼-grain doses, and afterwards in ½-grain doses, with marked effect, the patient feeling much better and the hysterical attacks becoming far milder and less frequent. Dr. Rozenbach also—having tried bromide of potassium unsuccessfully in half a dozen cases of hysteria—ordered bromide of gold; during the first week the attacks became less frequent. Immediately after the drug was commenced, the sensibility of the mouth became deadened, but that was the only symptom of bromism which occurred. Again, Dr. Danillo prescribed bromide of gold in eight cases of epilepsy, ordering at first four pills, each containing ½ of a grain, and afterwards from twelve to sixteen of these pills per diem. No symptoms of bromism, with the exception of some anæsthesia of the mouth, were produced. In five cases there was more or less improvement; in one of these the fits became reduced in degree to the level of *petit mal;* in another, where the patient was a girl of 14, the fits, which had formerly occurred once or twice a week, were completely stopped, and four months afterwards there had been no return; in three cases the fits became weaker and less frequent. Over the remaining three of the eight cases, the bromide of gold appeared to exert no influence. Dr. Shcherbak has recently published in the *Vrach* an account of some laboratory experiments made with the view of ascertaining the proper dose of bromide of gold, and also of comparing its action with that of other better-known bromides. The drug was administered in three ways,—by intravenous injection, by hypodermic injection, and through the œsophageal tube into the stomach. It was found that artificially-induced epileptiform attacks could be averted by the intravenous injection of .003 gramme per kilogramme of body-weight, larger doses being needed in hypodermic administration (viz., .09 to .16 gramme), while by the stomach the attacks were not entirely prevented unless from .1 to .2 gramme per kilogramme of body-weight was employed. On the whole, it appeared that bromide of gold is decidedly more active weight for weight than the more commonly used bromides, probably in the proportion of 10 to 1. Its price is about three shillings for fifteen grains, so that, taking one grain as the ordinary dose for an adult, it can hardly be considered an exceptionally expensive drug. It is readily soluble in water, and the solution, if not exposed to light, keeps very well.—*Lancet*, April 19, 1890.

VOMITING IN THE LATER MONTHS OF PREGNANCY.

At the meeting of the Obstetrical Society of Glasgow, held March 26, 1890, Dr. Kirk (Partick) read a paper on two cases of severe vomiting in the later months of pregnancy, associated with hemialbumosuria and diaceturia, in which he stated that these conditions of the urine had not been previously observed in pregnancy. In the first case, the vomiting was associated with marked pigmentation of the skin, and in the second, in which it was of the convulsive form, with slight jaundice. The propeptone or hemialbumose was detected in the ordinary way,—namely, by carefully adding a mineral acid and boiling. This treatment of the urine in both cases gave a flocculent precipitate, which disappeared on boiling, but reappeared as the urine cooled. In the second case, the urates were also precipitated by the test, but these were readily distinguished by the low temperature at which they disappeared on heating. The urine in this case further gave a deep purple red color with ferric chloride, indicating the presence of ethyl-diacetic acid; not only so, but the same reaction was also obtained at first in the distillate after acidulating with hydrochloric acid, this apparently being the first time this has been observed, a fact which Dr. Kirk was inclined to attribute to the large quantity of the acid present in this case. Both patients were treated by chloral hydrate, and subsequently by sodium salicylate (the diaceturia was observed before the latter or any drug was administered). In both the abnormal state of the urine ceased within eight days, and they

were generally much improved. Dr. Kirk further drew attention to the great viscidity and frothing power developed in the urine by ferric chloride, and to the light which this shed on the styptic power of this substance. He next referred to cases of jaundice from obstruction and functional disturbance, in which he had also observed the occurrence of hemialbumosuria and diaceturia (singly or both together), and said that although these states of the urine had been often observed in the same class of cases, he was not aware of their coexistence in any single case having been previously pointed out, an occurrence which, nevertheless, he believed must be not uncommon.—*British Medical Journal*, April 19, 1890.

HYPODERMIC INJECTIONS OF CHLORODYNE IN DIARRHŒA.

Dr. Cimbali, of Rome, writing in the *Riforma Medicæ* (*Lancet*, April 19, 1890) remarks that in serious forms of certain maladies (as, for example, enteric fever, pneumonia, malaria, etc.), an uncontrollable kind of diarrhœa sometimes occurs, which, besides being a great annoyance to the patient, always aggravates his condition. This profuse diarrhœa, in which the stools amount to twenty or thirty per diem, is usually met with in severe adynamic forms of infectious diseases, and is, moreover, a sign of a highly infectious condition. It is impossible to moderate it either by astringents or by the strongest excitants. In many cases, however, he has successfully employed hypodermic injections of chlorodyne. 15 grains of chlorodyne are injected, and if this is insufficient, the injection can be repeated five or six hours later, unless it is one of those diarrhœas which is the immediate forerunner of the death agony. As a rule, however, after the first injection of chlorodyne, the number of stools rapidly diminishes, and the patient experiences great relief. Two or three injections during the twenty-four hours suffice to check, or, at least, to moderate them.

A SIMPLE TREATMENT FOR CROUP.

According to the Paris correspondent of the *Medical Press and Circular* (April 16, 1890), a doctor from Toulouse asserts that he has had considerable success in the treatment of the above terrible affection by employing a tablespoonful of common sulphur in a glass of water, given by tablespoonfuls every two hours, the mixture being previously stirred. Sulphur is certainly not a new remedy for croup or diphtheria; on the contrary, it is as "old as the hills," but the simple method mentioned may be tried by any one, and worth recording, perhaps.

WINDOW-PANE BAROMETER.

A pretty use of cobalt and nickel salts, which, as is well known, are affected by changes in the amount of moisture in the air, and which change they indicate by exhibiting different colors, is suggested by Rueckert in the *Rep. Annal Chem.* If window-panes, or wall-paper, or the like, are painted with the following solutions: 1. Chloride cobalt, 1; gelatin, 10; and water, 100. 2. Chloride copper, 1; gelatin, 10; and water, 100. 3. Chloride cobalt, 1; gelatin, 20; water, 200; nickel oxide, .75; chloride copper, .25, they will be colorless in damp weather. In clear weather, solution No. 1 will give blue color, No. 2 yellow, and No. 3 green.—*Weekly Medical Review*, April 26, 1890.

THE TREATMENT OF ADDISON'S DISEASE.

In order to possess a rational method of treatment of any morbid process, it is, of course, necessary that the causes and pathogenesis of that process be recognized. In the case of Addison's disease, however, we are almost totally ignorant as to these data, for even autopsies do not give the same results. Most frequently post-mortem examination shows an implication of the suprarenal capsules. In some tuberculosis of these glands is recognized, in others simple inflammation with pigmentation, while in others, perhaps, there will be simple amyloid and caseous degeneration, or, finally, echinococci may be recognized. Sometimes, even, we find that in both capsules we have illustrations of a number of these different processes. Sometimes we have the disease confined to a single capsule and to a single form of pathological process; again, occasionally it is found that the suprarenal capsules are perfectly normal, while the semilunar ganglia of the cæliac plexus is the seat of pigmentary atrophy, or other degenerative process; while, again, post-mortem examination may yield only negative results, and no lesion of the suprarenal capsules or of the sympathetic ganglia

be discoverable. It is thus explainable how various authors have attributed the symptoms of Addison's disease not to the disturbed function of the suprarenal capsules, but to the alteration of the sympathetic or to some unrecognizable blood alteration. In the *Zeitschrift für Therapie* for April 1, 1890, PROFESSOR CANTANI publishes a short paper in regard to the nature and treatment of Addison's disease. The author is rather inclined to accept, as offering the most probable explanation of the clinical symptoms of this disease, the theory that the symptoms point to an implication of the suprarenal capsules, though he admits that several objections may be offered to this view. First, the extirpation of the glands in dogs produces no symptoms of Addison's disease; and, second, frequently in post-mortems of undoubtedly Addison's disease the suprarenal capsules were found unchanged. The author, however, does not admit that these objections are unanswerable, for he claims that in cases where the suprarenal capsules do not appear to have undergone any change, careful examination with the microscope might serve to reveal considerable alteration. On the other hand, he claims that the negative result of experiments is likewise of little force, since these experiments were made on dogs, in whom, perhaps, the suprarenal capsules do not possess the same function as in man. The prognosis is almost invariably unfavorable, although cases may, perhaps, drag out their existence for several months or perhaps several years. This fact, of course, shows us that our therapeutic measures are extremely unsatisfactory, and we are, therefore, restricted to the combating of the symptoms as they arise, and labor to improve the general nutritive condition. Hygiene and diet are, consequently, the most important elements in treatment, although the judicious use of remedies, such as quinine, Fowler's solution, iron, and phosphates in some cases prove of service. When violent vomiting is present, morphine should be used, with extract of belladonna. Where there is marked prostration, ether will prove of service, or lemonade of lactic or hydrochloric acids will prove of service. The nervous system especially appears to be the seat of intense exhaustion. Many other remedies have been tested in this disease, such as iodine and bromine salts, but Cantani has found that while the first are, perhaps, permissible, the latter are either useless or may be even harmful.

As regards electricity to the abdominal sympathetic, so frequently recommended, the author acknowledges that nothing except danger may be expected from it.

BACTERICIDES.

According to the Vienna correspondent of the *Medical Press and Circular* (April 16, 1890) PROFESSOR FODOR contributed an able paper this week at the Buda-Pesth Surgical Society on "Bacteria," which was largely an exposition of his own experiments on the microbes. The first part of his paper was devoted to the splenic fever bacilli in the blood of animals, after vaccination. The anthrax bacilli in defibrinated arterial blood rapidly died, as they also did in venous blood, and more particularly in fresh blood than in blood that had stood for some hours. The blood, after being three times frozen, had an injurious effect on the bacilli. Between 40° and 42° C. the blood was favorable for the cultivation of the bacilli, but when the temperature was raised to 43° the anthrax bacilli died in great numbers. Another mode of experimenting on the blood was by injecting different substances into the stomachs of dogs. He injected hydrochloric acid, tartaric acid (3 to 5 grammes), quinine (.6 to 1 gramme), and the blood was not observed to have any injurious effect on the bacilli, which ought to be carefully noted by all practising medicine, as quinine is specially valued for this reputed value in the blood. The chloride of sodium (3 to 5 grammes), on the other hand, had a powerful effect of converting the blood into a powerful bactericide. All the alkalies rendered the blood proof against the growth of bacteria; while large doses had the effect of immediately destroying a large number of the micro-organisms, which he observed in the following order: Ammonium carbonate (2 to 5 grammes), twenty-seven per cent. before injection and thirty-eight per cent. after injection; phosphate of sodium, thirty-two per cent. before and sixty per cent. after injection; carbonate of sodium, twenty-three per cent. before and seventy-six per cent. after; carbonate of potassium, forty-eight per cent. before and seventy-seven per cent. after; bicarbonate of sodium, twenty-nine per cent. before and eighty-three per cent. after injection. He then tried the resistance that injections of alkalies had on the virus of anthrax by vaccinating dogs with the virus. Nineteen dogs

were treated with bicarbonate of sodium and eight without; the eight vaccinated without using the bicarbonate of sodium were without exception affected with anthrax; out of the nineteen treated with bicarbonate of sodium, only three could be observed to have the bacilli in the blood. He concluded by expressing his conviction that large doses of the bicarbonate of sodium was the most powerful destructive agent for resisting anthrax infection; and that where infection had taken place, subcutaneous injections of the bicarbonate of sodium would be the most effectual treatment for anthrax. Although this has not yet been tried with the human blood, he has strong convictions that it will prove efficacious, which he promises to try on the first occasion.

THE PHYSIOLOGICAL PROPERTIES OF THE KOLA NUT.

We have already in previous issues of the GAZETTE called attention to the value of the kola nut in reducing tissue-change, and its similarity of action in this respect to the fresh coco-leaves. At a meeting of the Academie de Médecine, held April 8, 1890 (*La Tribune Médicale*, April 10, 1890), DR. M. HECKEL read a paper on this subject, in which he claims that, even after the extraction of the caffeine by chloroform, his experiments have shown him that the powder of the kola nut still possesses marked properties, especially exerted on the muscular tissue and on nervous excitability. He states that the red substance noted by Sée in his work on the African kola, and which remains in the nut after extraction with chloroform, is a highly complex body, in which the active principles are still to be found, although he has not yet succeeded in isolating them.

The negroes in tropical Africa are able to make a march in one day of more than forty miles, living simply on a single fresh kola nut, and Heckel claims that he has obtained himself equally surprising results through the use of the dry kola. He states that two officers stationed at Perpignan in 1888 made the ascent of Mount Canigou (nearly nine thousand feet in height), and walked for twelve hours without fatigue, resting only for about twenty to twenty-five minutes in all that time, eating only a small quantity of kola, corresponding to about two grains of caffeine. After this prolonged exertion, the muscular power did not seem to be depressed, and Heckel states that numerous other officers and soldiers have been able to undergo severe and sustained muscular effort without feeling fatigue while under the influence of small quantities of kola nut. Further, he states, that several officers of the infantry regiment, on the 11th of July, 1888, in fifteen and a half hours, walked nearly forty miles, and during this time they likewise only consumed enough kola corresponding to a little over two grains of caffeine.

Heckel states that there are contained in the kola nut other principles than caffeine, which are of considerable value in this connection.

The author states that at his suggestion the French Alpine Club has adopted kola as a stimulant or nutrient in their mountain-climbing expeditions, and their general testimony is that it has rendered them the greatest service, especially in preventing loss of breath and in sustaining muscular strength.

THE TREATMENT OF DROPSY.

In the treatment or dropsy four methods are possible by which the organism may be relieved from the excess of water,—through the sweat-glands, the kidneys, the intestine, or by mechanical operation. In other words, by diaphoresis, diuresis, catharsis, or surgical operations. Of these different methods, the decision as to which is the most reliable has not yet been absolutely established, although most practitioners agree in the principle that cardiac dropsy is, in the first place, best treated with diuretics, while dropsy of nephritic origin is most amenable to the use of diaphoretics. PROFESSOR FÜRBRINGER recently delivered an address before the Society for Internal Medicine in Berlin, of which the following represents the most important points (*Wiener Medizinische Blätter*, April 17, 1890): Fürbringer maintained that dropsy of renal origin calls especially for the production of diaphoresis at first, and even the employment with diaphoretics of laxatives. In the production of diaphoresis, both in renal and cardiac dropsies, warm-water baths or wrapping of the body with hot wet sheets, were found most useful, which might with advantage be combined with Russian steam-baths. This latter procedure Fürbringer, however, stated was to be employed with extreme caution, especially in high de-

grees of weakness of the heart, dyspnœa, and pulmonary complications. Even in other cases the baths are apt to be very severe, and may produce palpitation of the heart, dizziness, etc. In cases in which there is marked suppression of the urine, which, by the way, nearly always terminate fatally, Fürbringer has failed to produce the slightest relief by the production of diaphoresis. Diaphoresis may likewise be produced by internal remedies, among the best of which is pilocarpine, although its use is liable to result in the production of dangerous heart weakness and increase of bronchitis, and even lead to the production of pneumonia or pulmonary œdema. Again, in many patients violent vomiting and collapse follow its employment, so that its constant employment as a diaphoretic should only be undertaken with the greatest caution and in cases which can be watched. As regards the second group of remedies,—the diuretics,—digitalis is regarded as by far the most reliable; in fact, it might almost be called a sovereign remedy in cardiac dropsy; also in renal dropsy complicated by some cardiac affection it may prove valuable. On the other hand, in acute and subacute glomerular nephritis, in which the retention of urine is attributable to a lesion of the kidneys themselves, digitalis will frequently fail. Even here Fürbringer notes that the vinegar of digitalis with the wine of pepsin will often be well borne, and will produce diuretic effects even when the tincture proves inefficacious. His experience with *Adonis vernalis*, sparteine, and convallarine have been extremely unsatisfactory, and he has now discarded their use as substances complicated by unfavorable after-effects. On the other hand, Fürbringer maintains that caffeine, or the new substance, diuretin (theobromine), and a combination of various vegetable alkalies are worthy of some confidence. As regards strophanthus and caffeine, he has found them to be the most reliable in cases of cardiac origin free from renal complication, and in certain cases of cardiac dropsy strophanthus and caffeine have succeeded even when digitalis has failed. Although such cases exist, they are to be regarded as rarities.

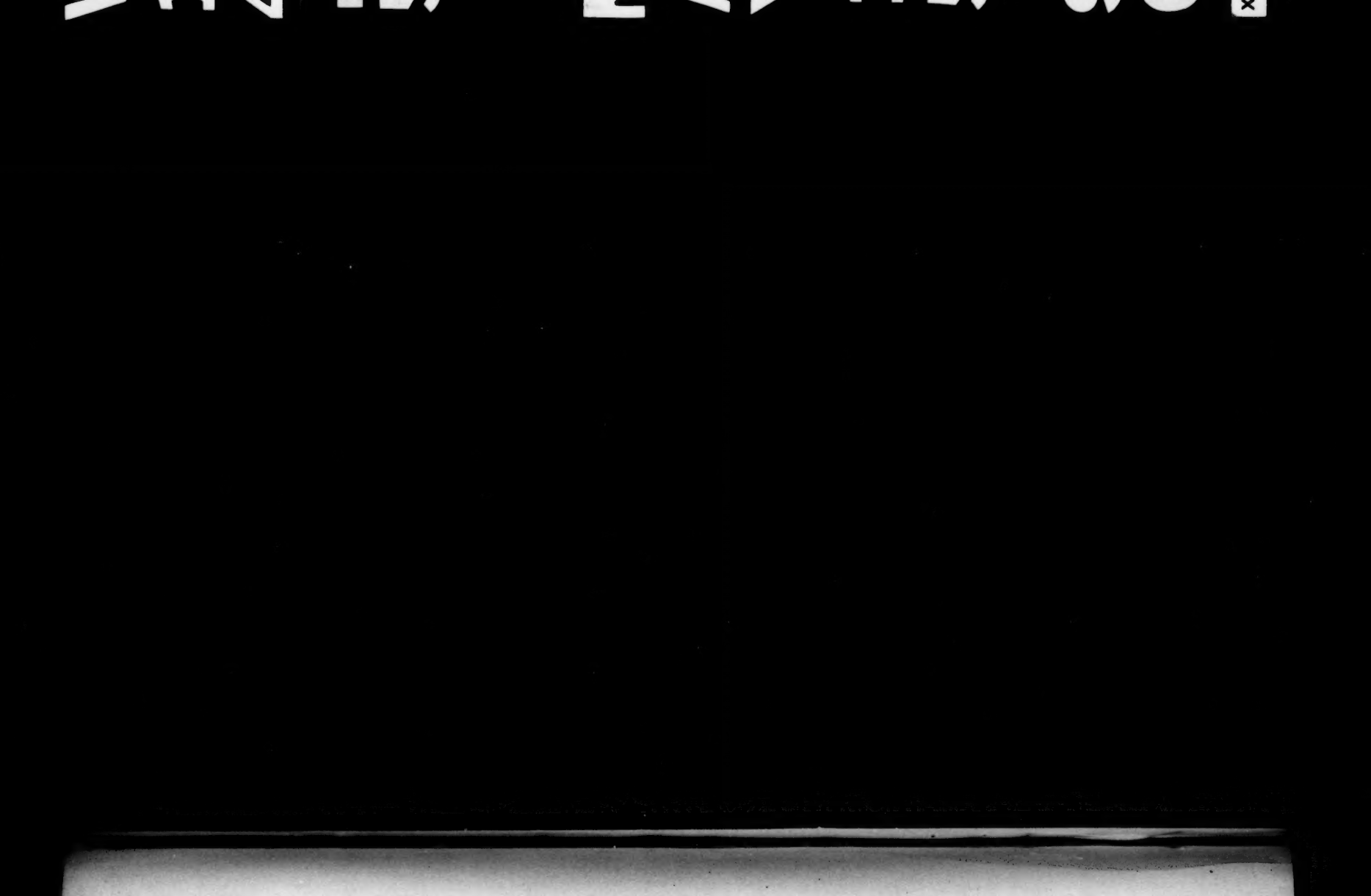
Calomel, according to Fürbringer, is, in some cases, an active diuretic, although it is apt to be unreliable, and, according to Fürbringer, should be the last refuge. It should invariably be avoided in cases of dropsy complicated by severe nephritis.

As regards surgical interference, capillary drainage seems to be preferable, although here also there is danger of gangrene and septic infection of the wound, resulting in erysipelas, abscess, etc.

Perhaps the best method, where mechanical interference is required, is obtained in the use of long and deep scarification, although here also great caution must be observed against infection.

ANTIMONY IN INFLAMMATIONS.

It was claimed by Dr. Spender, in the *Practitioner* for March, 1885, that antimony, in frequently-repeated small doses,—1/6 of a grain of tartar emetic,—has the power of completely dissipating early local inflammations. Acting on this suggestion, SURGEON-MAJOR E. LAWRIE writes in the *Practitioner* for April, 1890, that he has since then been using antimony in surgical inflammation in small doses frequently repeated, and he now regards it as quite as useful in arresting local inflammation as quinine is in malarial fever. He claims that it prevents and arrests inflammation, if this is not originated or kept up by a specific or septic cause. Mr. Lawrie believes that there must be more than the diaphoretic action in the effect which antimony in small, frequently repeated doses has upon inflammation. But it is not understood how it is that the well-known tolerance of antimony sets in after the drug has been administered several times, either in large or small doses, nor is it understood how it is that antimony increases the frequency of the heart's action.

The author states that in all inflammatory diseases which are not of a specific nature, antimony is always used in the Afzagunj Hospital. It may be given without fear of causing nausea and diarrhœa or depression, even in diseases where its use would appear to be contraindicated. For example, during the last year the writer employed it in the treatment of typhoid fever, and finds that it cuts the disease short with such certainty that it is almost doubtful whether the lesion of typhoid is specific or is not rather incidental or adventitious. In typhoid fever, no less than in mucous enteritis, the diarrhœa depends upon an inflammation of the intestine, and though at first sight it might be thought that antimony would increase the diarrhœa, it actually stops it.

The author administers it usually combined with cardiac tonics, and he claims that there are few cases of inflammation where its use will not be attended by benefit without any danger whatever of inducing depression.